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The Graphic Rating Scale—*Donald G. Paterson*

Analyzing Ratings and Training Raters
—*Forrest A. Kingsbury*

Job Classification and Personnel Rating
—*M. A. Bills*

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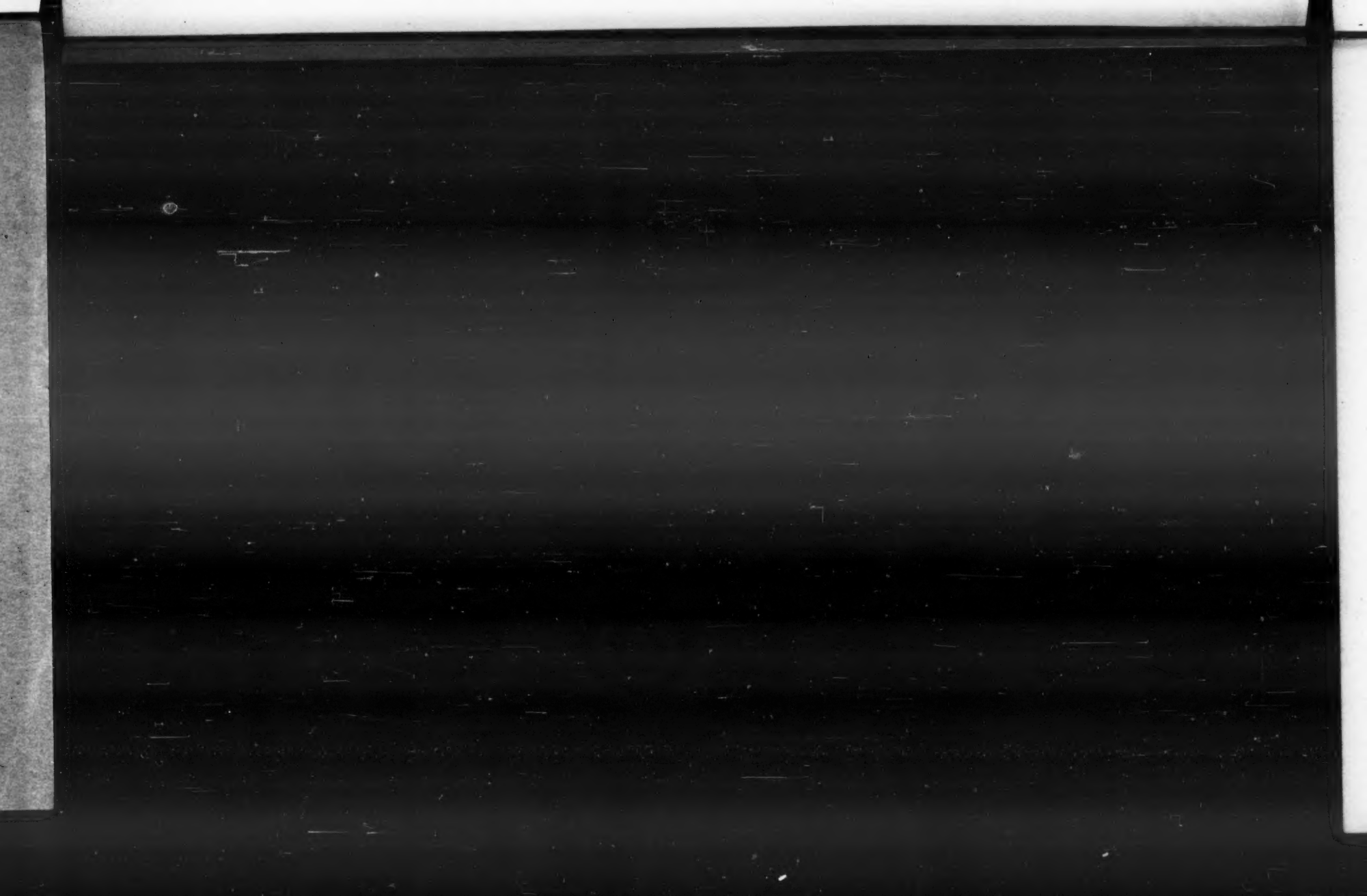

The Scott Company Graphic Rating Scale[1]

By Donald G. Paterson, *University of Minnesota*

WALTER DILL SCOTT was the pioneer who introduced the method of rating the abilities of workers in industry prior to the World War. He invented what has come to be known as the Man-to-Man Comparison Scale and as Director of the Committee on Classification of Personnel in the United States Army modified that scale for use in rating the efficiency of army officers. This scale supplanted the seniority system of promotion in the army and initiated an era of promotion on the basis of merit. It is natural, therefore, that the Scott Company, in its work in industry, should utilize the rating method as part of its technique in solving certain types of personnel problems. Man-to-man rating scales were developed for foremen and for executives and given a thorough trial in several large organizations. Considerable difficulty was experienced in this work primarily because of the time and effort necessary in getting executives to carefully prepare their "master scales" and to use their "master scales" in subsequently rating their subordinates. Without such care, it is well nigh impossible to secure satisfactory results. The difficulty was ingeniously overcome by Ruml's suggestion that a simplified plan based on new principles should be adopted. The Graphic Rating Scale is the result and what follows is an attempt to describe this new method, its development, its uses, the results that have been achieved and the steps that must be taken to safeguard its use.

[1] The development of the Graphic Rating Scale is the result of coöperative effort on the part of the members of the Scott Company, Philadelphia. Credit for originating the graphic rating method as well as supervising its experimental development belongs to Beardsley Ruml. The writer participated in its development and is indebted to all members of the Company for the opportunity of assisting over a considerable period in this intersting experiment. Full acknowledgment would necessitate mention of all the members of the Company. Special mention should be given, however, to Mr. L. B. Hopkins and Mr. R. C. Clothier who contributed much to the development of the logic and uses of the scale in various industrial situations. Much of the present article is taken directly from the Scott Company Bulletins on the Graphic Rating Scale and is published with the permission of the Company's officers.

DESCRIPTION OF THE GRAPHIC RATING SCALE

The Graphic Rating Method is a new method for securing the judgment of superiors on subordinates. Other methods, apparently similar, have appeared in the past, yet this new method includes two features which have not been brought together here-

(SCALE B)

GRAPHIC RATING REPORT ON WORKERS

Name of Employee _____ Branch _____

Position of Employee _____ Department _____

Employee Rated By _____ Date _____

Instructions for Making Out This Report:— Rate this employee on the basis of the actual work he is now doing. Before attempting to report on this employee, it is necessary to have clearly in mind the exact qualities which are to be reported on. Read the definitions very carefully. In each quality compare this employee with others in the same occupation in this company or elsewhere. Place a check (V) somewhere on the line running from "very high" to "very low" to indicate this employee's standing in each quality. It is not necessary to put the check (V) directly above any of the descriptive adjectives.

QUALITIES	REPORT				
I. **Ability to Learn:** Consider the ease with which this employee is able to learn new methods and to follow directions given him.	Very Superior	Learns With Ease	Ordinary	Slow To Learn	Dull
II. **Quantity of Work:** Consider the amount of work accomplished and the promptness with which work is completed.	Unusually High Output	Satisfactory Output		Limited Output	Unsatisfactory Output
III. **Quality of Work:** Consider the neatness and accuracy of his work and his ability constantly to turn out work that is up to standard.	Highest Quality	Good Quality		Careless	Makes Many Errors
IV. **Industry:** Consider his energy and application to the duties of his job day in and day out.	Very Energetic	Industrious		Indifferent	Lazy
V. **Initiative:** Consider his success in going ahead with a job without being told every detail; his ability to make practical suggestions for doing things in a new and better way.	Very Original	Resourceful	Occasionally Suggests	Routine Worker	Needs Constant Supervision
VI. **Co-operativeness:** Consider his success in effectively co-operating with his co-workers and with those exercising greater authority.	Highly Co-operative	Co-operative		Difficult to Handle	Obstructionist
VII. **Knowledge of Work:** Consider present knowledge of job and of work related to it.	Complete	Well Informed	Moderate	Meagre	Lacking

REMARKS: (See Reverse Side for Suggestions) _____ Total _____

_____ Final Rating _____

_____

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FIG. 1. FRONT SIDE OF ONE OF THE RATING SCALES FOR FACTORY WORKERS

(SCALE B)

GRAPHIC RATING REPORT ON WORKERS

The Purpose of Periodic Rating Reports

1. The graphic rating report is a practical method by means of which each employee's ability and fitness for promotion can be known quickly, with a reasonable degree of accuracy and with uniformity throughout the company.

2. The ratings are converted into a numerical expression indicating the ability of each person in those qualities deemed most essential, such as ability to learn new methods, quantity of work, quality of work, industry, initiative, co-operativeness, and knowledge of work.

3. Because the Rating Report calls attention separately to each of these essential qualifications, it lessens the danger that opinions will be based on minor points, with a corresponding disregard of important qualities. It is to the interest of all concerned to replace snap judgments by carefully thought-out reports.

4. This rating report has been devised after careful consideration of the best practices throughout the country. Its chief claim for the support of the supervisor and the employee is the fact that it is simple, concrete and definite. It reduces the time required to rate an employee to a minimum, yet it is so arranged that the interests of each employee are safeguarded as regards accuracy and fairness.

5. All rating reports are confidential. Any employee who is rated, however, may be told where he stands in order that he may improve himself if he so desires.

To Supervisors: Supplement Your Rating With Appropriate Remarks.

When you have completed your rating of the employee on the front of this report, enter under REMARKS any comments which are appropriate.

In doing so, consider the possible comments suggested here and write the numbers of any comments that are particularly pertinent.

1. Recommend that Personnel Department interview this employee to advise him
   (a) How he can improve himself.
   (b) Concerning his present and future opportunities.
2. Deserves promotion.
3. Desires transfer to other work.
4. Well liked by fellow-employees.
5. Would do well in a supervisory position.
6. Is handicapped physically as follows.....
7. Is taking a course in.....

FIG. 2. REVERSE SIDE OF ONE OF THE RATING SCALES FOR WORKERS

tofore,[2] and which are basic in the Graphic Rating Method. These features are:

1. The person who is making the judgment is freed from direct *quantitative* terms in making his decision of merit in any quality.

2. The person who is making the judgment can make as fine a discrimination of merit as he chooses. These two facts eliminate the restrictions on natural judgments which other rating methods impose.

Figures 1 and 2 reproduce one of the scales that have been developed for rating the efficiency of factory workers. Figure 3 shows one form of scale

[2] One early method of graphic rating is described by J. B. Miner, Journal of Applied Psychology, Vol. I, pp. 123–133.

(SCALE D)

GRAPHIC RATING SCALE

FOR

EXECUTIVES, DEPARTMENT HEADS, FOREMEN AND SUPERVISORS

Name of Executive Doing Rating..... Date .....

Branch or Division..... Name of Supervisor Being Rated.....

Department ..... Supervisor's Department.....

Instructions for Making Out This Report:—Before attempting to rate this supervisor, re-read carefully the definition of each quality immediately before rating the supervisor in that quality. Base your rating on the work this supervisor is actually doing at this time. Indicate your rating in each quality by placing a check (√) on the line just where you think it ought to be. For instance, if in quality I, you think the person you are rating ranks somewhere between Indifferent and Favorable, put your check on the line somewhere between these two points.

QUALITIES	REPORT				
I. Consider his success in winning confidence and respect through his personality.	Inspiring	Favorable	Indifferent	Unfavorable	Repellent
II. Consider his success in doing things in new and better ways and in adapting improved methods to his own work.	Highly Constructive	Resourceful	Fairly Progressive		Routine Worker
III. Consider his success in winning the co-operation of his men, in welding them into a loyal and effective working unit.	Capable and Forceful Leader	Handles Men Well		Fails to Command Confidence	Frequent Friction in His Department
IV. Consider his success in organizing the work of his department, both by delegating authority wisely and by making certain that results are achieved.	Effective Even Under Difficult Circumstances	Effective Under Normal Circumstances		Lacks Planning Ability	Inefficient
V. Consider his success in making his department a smooth running part of the whole organization; his knowledge and appreciation of the problems of other departments.	Exceptionally Co-operative	Co-operative	Not Helpful	Difficult to Handle	Obstructionist
VI. Consider his success in improving his men by imparting information, creating interest, developing talent and arousing ambition.	Develops Men of High Calibre	Develops Men Satisfactorily		Neglects to Develop Men	Discourages and Misinforms Men
VII. Consider his success in applying specialized knowledge in his particular field, whether by his own knowledge of ways and means or through his use of sources of information.	Expert	Competent		Uninformed	Neglects and Misinterprets the Facts

REMARKS: .....

.....

.....

Total .....

Final Rating .....

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FIG. 3 RATING SCALE FOR EXECUTIVES

constructed for use in rating executives by their superiors. Inspection of these two sample rating scales brings out clearly the two points mentioned above. The one doing the rating is freed from *quantitative* terms in indicating his opinion of the subordinate in any quality for he simply records his opinion by making a check mark on the line following a defined quality or ability. He is guided in this by short descriptive adjectives that define the various degrees of excellence in that quality. Furthermore, the rating executive is not forced to place a subordinate in one of several classes but may put his check mark anywhere on the line. This means that he may make as fine a discrimination of merit as he chooses. It is also important to note that the rating executive himself is not burdened with the task of summing up his ratings. This work is clerical in nature and is economically performed by clerks in the personnel department.

The steps involved in summing the ratings and in evaluating the ratings for use on permanent record cards is as as follows: A stencil or scale divided into ten divisions each numbered from 1 to 10, is provided for converting the various check marks into numerical scores. The directions printed on this scoring stencil are: Place the stencil so that the scale coincides with the line for Quality I. Note in which of the ten scale divisions the check mark falls. Enter this number in the column at the right of the line. Proceed similarly to score the report for Qualities II, III, IV, V, VI and VII. Add the seven numbers you have entered in the column at the right of the report lines and enter this sum after the word "Total" in the lower right-hand corner of the report sheet. These "Total Ratings" are never used but are converted into Final Ratings by the following procedure: the reports made by a given supervisor or foreman are assembled and the "total scores" are arranged in a frequency distribution from high to low. This distribution is then divided into five parts so that the highest 10 per cent of the Total Scores are given a Final Letter Rating of A, the next 20 per cent are given a Final Letter Rating of B, the next 40 per cent are given a C rating, the next 20 per cent are given D and the lowest 10 per cent are given E. The limiting points in Total Scores are noted and a "Key to Final Ratings" is prepared whereby future ratings made by this supervisor may readily be converted into Final Ratings. This procedure converts the actual ratings into relative ratings and is designed to do away with the error which otherwise arises because some supervisors rate too high and other supervisors rate too low. The necessity for some such statistical method of correction will be explained in greater detail in a later part of this paper.

PURPOSES OF RATING METHODS IN BUSINESS AND INDUSTRY

A word or two about the purposes of such rating scales will clarify the actual presentation of results. These purposes may best be outlined in terms of three factors that have brought

about the development of rating methods as one of the tools of personnel administration.

I. Rating methods have been developed because of a recognition of *the educational value of ratings* from the following points of view:

a. The educational effect on those who make the ratings. Making out the rating reports insures the analysis of subordinates in terms of the traits essential for success in the work.

b. The educational effect on the employee. The knowledge that he is being judged periodically in essential traits affords him knowledge of those things that are considered vital and important, encourages self-analysis and provides an incentive for self-improvement in those traits in which he is weakest.

II. The development of rating methods has also been due to a realization of the need of bringing about a more uniform method of expressing the opinions of superiors concerning subordinates in order to:

a. Avoid, as far as possible, snap judgments made at times when sudden decisions affecting individual employees are to be made.

b. Standardize the elements considered as essential by the Company, eliminating as far as possible disagreements among superiors concerning employees.

III. A more important reason for the development of rating methods is found in the need for bringing to the notice of the management the progress of individual employees so that:

a. Employees whose development seems to be rapid or whose ability seems to be unusual may be considered by the management for a wage increase or for promotion as a reward for exceptional merit.

b. Employees who are doing unsatisfactory work in a given department may be considered for transfer to other work where they will be more valuable to themselves and the company.

c. Employees who are unusually weak in certain traits may be given vocational counsel or given special training by the Educational Department.

Decisions under *a*, *b*, or *c* above should not, of course, be based on the rating reports alone. Such reports should be looked upon as of value in indicating those employees to whom the attention of the management should be directed. Decisions should be based upon a consideration of the qualifications of the individual as indicated by Mental Alertness rating, Trade Test rating, past and present ratings of supervisors, previous experience, education, physical condition, etc.

THE EXPERIMENTAL DEVELOPMENT OF THE GRAPHIC RATING METHOD

The necessity for carefully determining the possibilities and limitations of this new method of rating was evident and steps were taken to conduct an extensive experiment in three large companies. The purpose of this experiment was to discover:

1. The reliability of judgments secured by the Graphic Rating Method.

2. Whether the need for "interpretation" (statistical method for correcting original ratings), due to dif-

ferences in standards of judgment on the part of different executives exists when the Graphic Rating Method is used.

3. The general usefulness and practicability of the method.

GENERAL SUMMARY OF RESULTS

1. Ratings made by the Graphic Rating Method are highly reliable. This is evidenced by the close relationship between ratings on the same men by the same judge for different months; and by the close relationship between the ratings on the same men by different judges.

2. Large differences were found in the rating tendencies or standards of different foremen. These differences are important enough to necessitate the use of the statistical method of correction described in the Rating Scale Guide.[3] This correction method appears adequate for the adjustment of differences in rating standard on the part of different judges.

3. The method has been found simple and practicable in actual use.

EXPERIMENTAL PROCEDURE

In subjecting the Graphic Rating Method to a thorough experimental trial, ratings were secured on the following kinds of workers:

a. Office clerks.

b. Maintenance workers—carpenters, millwrights, plumbers, electricians, motor repairmen, boilermen, painters and laborers.

c. Tool designers—draftsmen, detailers and tracers and machine designers.

d. Machine shop operators—drill press operators, lathe operators, hand screw machine operators, etc.

e. Assemblers—small and large machine parts.

Practically all the workers in the above groups were rated by at least two foremen or supervisors. For certain groups it was possible to have the same workers rated for each of three months by the same foremen. Care was taken to explain to the foremen and supervisors the purpose of the Graphic Rating Method as well as to instruct them how to make out their reports in accordance with the standard directions. In all, 1446 ratings were secured in the course of the experiment.

RESULTS OF THE EXPERIMENT

A. The consistency of foremen's ratings

Assuming that the same workers are of about the same general value to the company in one month as they are in the next month, we should expect a foreman's ratings of the same men to be consistent from month to month.

A foreman's ratings would be considered to be consistent:

1. If he gives approximately the same average ratings to his men as a group in one month as in another.

2. If he rates his men in approximately the same order from month to month.

1. Consistency in ratings month to month. Results bearing on consistency in ratings from month to month

[3] The Rating Scale Guide is a bulletin issued by the Scott Company giving in detail all necessary directions for properly handling the rating sheets.

are available for nine foremen who submitted ratings on their workers for three successive months.

The *rating tendency* of each of these foremen is shown by the following comparison of the three monthly average ratings given to the same workers:

TABLE 1

RATED BY	AVERAGE RATING FIRST MONTH	AVERAGE RATING SECOND MONTH	AVERAGE RATING THIRD MONTH
Foreman A.....	58.9	60.9	61.0
Foreman B.....	52.2	51.1	53.4
Foreman C.....	51.6	50.7	52.2
Foreman D.....	46.2	46.8	49.2
Foreman E.....	54.3	58.6	60.0
Foreman F.....	50.1	58.1	52.0
Foreman G.....	38.6	45.9	44.5
Foreman H.....	46.3	46.3	55.3
Foreman I.....	55.3	43.7	45.5

The average ratings given by Foremen A, B, C and D are remarkably stable from one month to another. Foreman E tends to give a slightly higher rating each succeeding month. Foreman F rates his men approximately the same during the first and third month while he rates them higher during the second month. Foreman G and I submit similar average ratings for the second and third month which differ from the average ratings for the first month. Foreman H rates his men on the same level for the first two months but rates them higher for the third month.

The practical conclusion resulting from this study is that great care must be taken in interpreting the rating results for each foreman at each periodic rating, until his rating tendency has become stablilized. Ratings from two or three months for a given foreman can be combined for the purpose of establishing more definitely a foreman's rating tendency and in computing a Key for Final Ratings only in case the rating tendency remains sufficiently constant. Hence it is necessary that a careful analysis be made of the ratings of each foreman at each periodic rating.

2. Consistency in rating same workers month to month. The *consistency* of these foremen's ratings from month to month is shown by the *agreements* between the individual ratings given to the *same workers* in the first month and those given in the second and third months by each of the foremen. These agreements are evaluated in terms of the coefficient of correlation. The correlations are shown in table 2. A correlation over +0.75 is considered high.

TABLE 2

RATED BY	CORRELATIONS BETWEEN FIRST AND SECOND RATINGS	CORRELATIONS BETWEEN SECOND AND THIRD RATINGS
Foreman B.....	+0.91	+0.96
Foreman H.....	0.88	0.92
Foreman C.....	0.85	0.86
Foreman G.....	0.84	0.92
Foreman I.....	0.84	0.90
Foreman D.....	0.82	0.90
Foreman F.....	0.62	0.66
Foreman E.....	0.60	0.82
Foreman A.....	0.52	0.88
Average correlation..	+0.76	+0.87

The average correlation between the ratings given in the first month and those given in the second month by these nine foremen is +0.76. A correlation of +0.76 is high and indicates that the rating of these fore-

men meet the requirements of consistency.

The average correlation between the ratings given in the second month and the third month, is, however, much higher, +0.87. The ratings of these foremen are found to become even more consistent from month to month.

This tendency toward greater consistency in the later ratings is also demonstrated by the fact that the correlation for each and every foreman is higher for the second pair of ratings than it is for the first pair.

Only one of these foremen (Foreman F) exhibits an unsatisfactory degree of consistency in his ratings. The correlation for the first and second months for this foreman is + 0.62 and for the second and third months is +0.66. It is probable that with further practice and instruction this foreman's ratings will also show a satisfactory degree of consistency.

Correlations of at least +0.75 should be attained before a foreman's ratings are pronounced "Satisfactory in Consistency." Ratings submitted by foremen who prove to be inconsistent in their judgments should be discarded because such ratings are unreliable.

This measurement of consistency from month to month is a definite and practical method whereby a foreman's ability to judge his workers can be determined. By this method foremen can be checked up on the consistency of their judgments of men.

B. The agreement between foremen concerning the same workers

A foreman should not only be consistent in agreeing *with himself* in the ratings he gives to the same workers from month to month but he should also agree with other foremen whose ratings of the same workers are equally consistent and reliable.

1. *Agreements between foremen as shown by correlations.* Ratings of the same workers by three pairs of foremen for three successive months as well as the first monthly ratings of the same workers by five additional pairs of foremen are available. The correlations are as follows:

TABLE 3

AGREEMENT BETWEEN	FIRST MONTH	SECOND MONTH	THIRD MONTH
Foremen A and F.....	+0.33	+0.40	+0.50
Foremen H and D....	0.78	0.82	0.78
Foremen B and E.....			0.90
Foremen J and K.....	0.82		
Foremen L and M....	0.63		
Foremen N and O.....	0.80		
Foremen N and P....	0.75		
Foremen O and P.....	0.84		

The lower correlations between Foremen A and F are due to the lack of "consistency" found in the ratings of Foreman F. It is important to note that with the improvement in the consistency of Foreman F's ratings (noted in the preceding section) we find an increase from month to month in the correlations between his ratings and those of Foreman A.

The correlations between Foremen H and D are consistently high for each of the three months.

The correlations between Foremen B and E for their third monthly rating is very high (+0.90). Data are not available for previous months.

The correlation between Foremen J and K for their first monthly rating is

high (+0.82). These two foremen have not yet submitted their second and third monthly ratings.

The correlation between Foremen L and M was +0.63. Their ratings were in close agreement with the exception of a radical disagreement concerning three of their workers.

Foremen N, O and P rated the same workers. The correlations are uniformly high. The correlation between Foreman N and O is +0.80; between Foremen N and P is +0.75; between Foremen O and P is +0.84. The ratings given by three foremen were averaged and it was found that Foreman N's ratings correlated +0.93 with the average. Foreman O's ratings correlated +0.95 and Foreman P's ratings correlated +0.93.

In general, we find a close agreement between foremen who rate the same workers provided that each foreman's ratings are consistent.

2. Agreements between foremen as shown by adjusted ratings. Agreements in the ratings given to the same workers by two foremen can also be determined by comparing the Final Letter Ratings given to those workers by the two foremen.

The Final Letter Ratings are derived in terms of a five division scale, i.e., A, B, C, D and E. (A represents a very high rating and E a very low rating.)

Figure 4, chart I (fig. 1) above, presents the results of the first monthly ratings given to a group of carpenters and painters by Foremen D and H. Inspection of the agreements and disagreements shown on the chart may be summarized as follows:

	NUMBER OF CASES	PER CENT OF CASES
Perfect agreement	25	52
Disagreement of one letter step	21	44
Disagreement of two letter steps	2	4
Disagreement of three letter steps	0	0
Disagreement of four letter steps	0	0
Total number	48	100

These two foremen disagree radically on only two carpenters. They agree within one letter step on 46 of the 48 carpenters. In general it is apparent that Foremen D and H are in close agreement concerning the respective merits of these carpenters and painters.

Figure 4, chart I (fig. 2), shows the results of the first periodic ratings given to 47 Tool Designers by Foremen J and K. A summary of the agreements and disagreements shows:

	NUMBER OF CASES	PER CENT OF CASES
Perfect agreement	29	62
Disagreement of one letter step	16	34
Disagreement of two letter steps	2	4
Disagreement of three letter steps	0	0
Disagreement of four letter steps	0	0
Total number	47	100

These two foremen disagree radically on only two Tool Designers. They agree within one letter step on 45 of the 47 Tool Designers. Foremen J and H are in close agreement

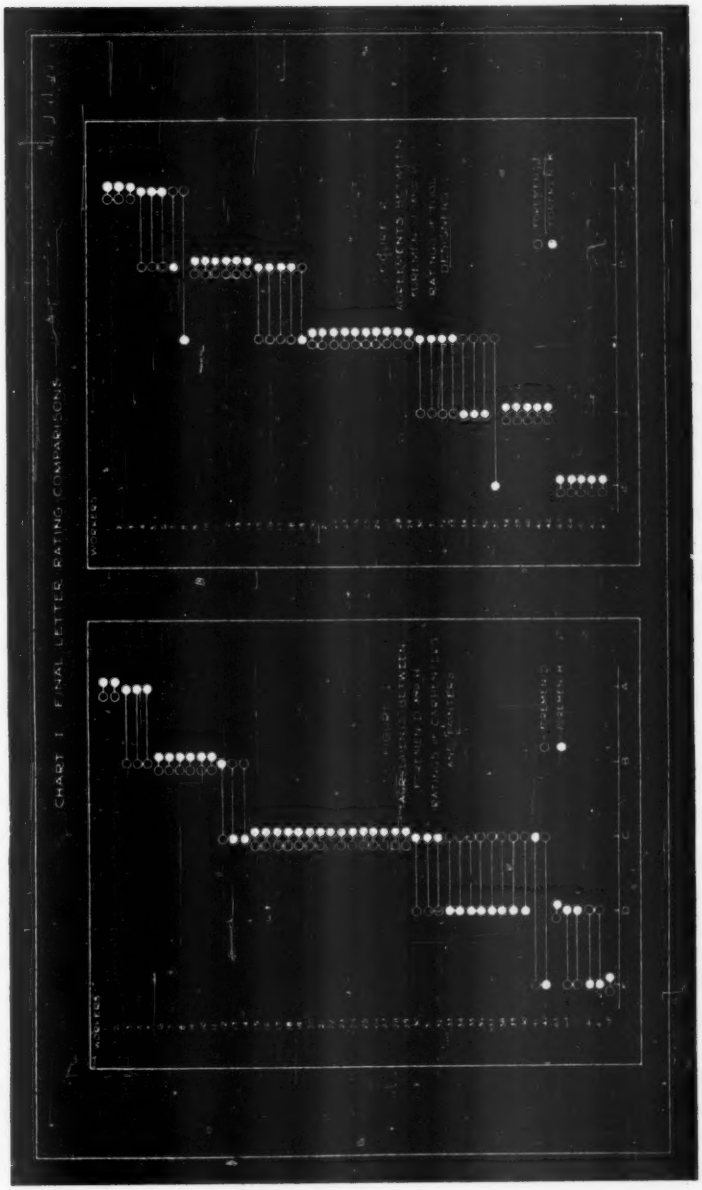


FIG. 4. FINAL LETTER RATING COMPARISONS FOR TWO GROUPS OF WORKERS RATED BY THEIR SUPERVISORS

concerning the value of these Tool Designers.

Agreements within one letter step on the A, B, C, D, E scale may be considered satisfactoy for all practical purposes. Disagreements of more than one letter step are considered as evidence of unsatisfactory ratings whenever they occur.

The study of agreements and disagreements between foremen and supervisors has led to the following generalizations:

1. In general, the close agreement between foremen concerning their workers justifies the use of the ratings as an index of the general value of employees.

2. Ratings secured from two supervisors can be used safely for permanent records if they agree within one letter step on the final letter scale. Whenever a disagreement of two or more letter steps occurs a conference should be held with the disagreeing judges and re-ratings secured.

C. Differences between foremen in rating tendency

Tendencies on the part of one foreman to rate all of his employees too high and of another to rate all of his employees too low were discovered by studying the rating tendencies of various foremen.

Figure 5, chart II, shows the percentage frequency distribution of the Total Ratings given by seven supervisors and foremen. It is apparent that Foremen A and S tend to rate their workers in the extreme upper range of the scale, i.e., for the most part over 55 points. The ratings submitted by Foremen D and R illustrate a tendency to rate in a much lower range of the scale.

These differences are not due to actual differences in the abilities of various groups. For example, Foremen A and F rated the same workers, yet Foreman A rates them high while Foreman F rates them much lower. Foremen H and D also rated the same workers and likewise they fail to agree in the general level of ratings given. It is important to note, however, that there need be no fundamental disagreement between two foremen who exhibit different rating tendencies in rating the same workers. They may and usually do rate the same workers in the same relative order.

These differences in rating tendencies show the need for reducing all ratings to a common basis. This is accomplished by the conversion of Total Ratings into Final Letter Ratings by the use of the method of statistical correction. (Described in the Rating Scale Guide.)[4] In this way one foreman's ratings may be compared with another without confusion. Without such corrections, it is difficult if not impossible to make accurate interpretations of ratings.

Unless properly used, the method of correction introduces an error of some importance. Reducing all ratings to a common basis is impossible in the case of an executive who has nothing but either very high grade or very low grade workers. In such case, a proper balance is secured by asking him to rate selected persons other than those in his department.

[4] Rating Scale Guide, op. cit.

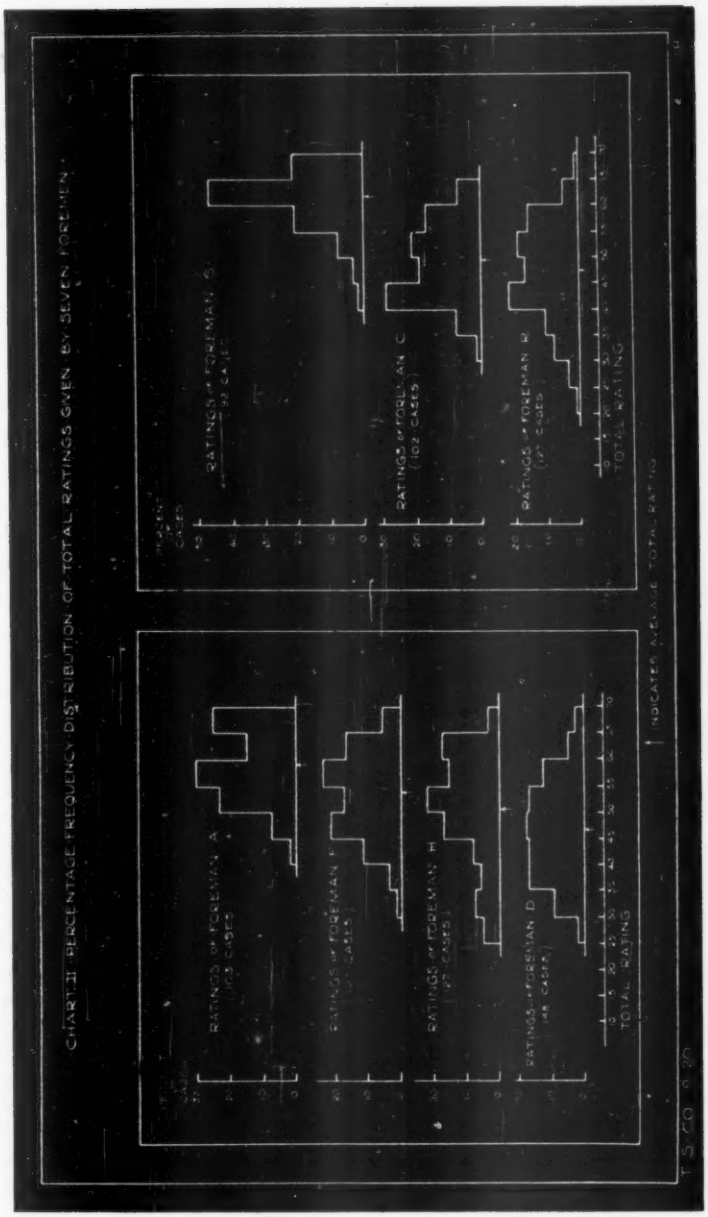


FIG. 5. COMPARISON OF THE TOTAL RATINGS GIVEN BY SEVEN FOREMEN

Experience has shown that the chance of a superior having as many as 40 men of exceptional ability is rather remote. However, if the condition is suspected, it should be investigated. If it is believed that any foreman is rating all of his workers high because of a real superiority of his workers, the procedure is as follows:

a. Secure ratings from this foreman on individuals who are known to be of mediocre ability. If he gives these mediocre individuals ratings corresponding to the middle group of his own subordinates, the correction method could be applied to his ratings with little or no error.

b. In case it appears that his ratings are due to the fact that his workers as a whole are exceptional, it would be well to prepare a list of names for this foreman to rate which would include a random distribution in ability of workers in the same kind of work. This data could then be used as the basis for calculating this foreman's "Key to Final Ratings." The true ability of his own workers would then be adequately revealed.

SAFEGUARDING THE RATING PROCEDURE

A knowledge of the limitations as well as the possibilities of the rating scale method is essential for the safe use of rating methods. Knowledge of methods of safeguarding the rating procedure should prevent any undue exaggeration of the value of ratings and should lead to greater care in handling the procedure so that errors in rating may be detected and so that different standards of judgment among the several supervisors may be minimized by adequate statistical treatment.[5]

The ways in which the rating procedure may be reasonably safeguarded are:

1. Rating supervisors should be instructed to follow closely the instructions on the Graphic Rating Sheets in making out their periodic reports.

2. Rating supervisors should clearly understand that reports are to be based on the work employees are actually doing at the time the ratings are made. This is necessary in order that all the ratings may be statements of facts as they are rather than guesses as to the future.

3. The need for reporting the ability of any given employee in comparison

[5] The writer can cite the costly experience of a very large organization as an example of the necessity for such statistical treatment. This company had built up a large file of ratings on their salesmen who were scattered throughout the United States. The sales manager was preparing to "scrap" all of the results and prepare a new rating scale on the assumption that the particular rating scale in use was responsible for the worthlessness of the ratings that had been accumulated at great expense. When asked what was wrong he said that they could not safely use the ratings for they knew that all of their salesmen in Atlanta, Georgia could not be poorer than all of their salesmen in St. Louis yet that was what the ratings revealed. He had failed to see that the error was due to a serious difference in the rating standards of his sales manager in Atlanta and his sales manager in St. Louis. It was obvious that a statistical method that would reduce the rating standards of the Atlanta and St. Louis managers to a common basis would have done much to increase the accuracy and usableness of these ratings filed in the central office at headquarters.

with other employees doing the same work should be pointed out to the rating supervisor. It is clear that a Typist should not be compared with a Messenger.

4. Each rating supervisor should be carefully instructed to report each employee on the basis of the defined qualities or traits. Otherwise some supervisors may report the worker on the basis of his own idea of what the names of the qualities mean to him. If this occurs it is evident that the ratings submitted by different supervisors will not be comparable.

5. It is found that better results are secured when the periodic ratings are scheduled at three month intervals rather than at monthly intervals. Monthly ratings appear to many supervisors to be unnecessary and are apt to be made with insufficient care.

6. It is necessary to secure two or three independent ratings on each employee in order that any inaccurate ratings may be detected. Such inaccurate ratings will be made if any of the supervisors are lacking in a knowledge of an employee's real ability. When such inaccurate ratings are detected, it is well to have a conference of the three supervisors in order that the supervisor whose knowledge of the employee is limited may arrive at a better understanding and knowledge of that employee.

7. In securing three independent ratings on each employee the Personnel Department is in a position to detect any radical disagreements that may be due to bias or prejudice on the part of a supervisor. As in 6, it is well to have a conference of the three supervisors when such radical disagreements are found. Sometimes a supervisor unconsciously permits some trifling incident with an employee to influence his report. A conference will lead to a more definite understanding and greater agreement as to the real merits of the employee.

8. Consultations should be held with supervisors who tend to rate all their employees the same. It is only necessary to point out to such supervisors the differences between the distribution of the ratings they have given and the distributions of the ratings given by other supervisors. Such consultations should lead to a wider recognition of the real individual differences that exist among employees.

9. Careful statistical treatment of the ratings of each supervisor is necessary in order to correct any tendency to rate too high or rate too low. Frequently one supervisor will judge his employees too leniently, thus giving all of them very high ratings while another supervisor will judge his employees too severely, thus giving all of them very low ratings.

10. In addition to the statistical treatment that corrects these tendencies, consultations should be held with supervisors who tend to rate too high or rate too low. This tendency can be pointed out to them by reference to the distribution of their ratings in comparison with the distribution of the ratings of other supervisors.

THE USEFULNESS AND PRACTICABILITY OF THE GRAPHIC RATING SCALE

The attitude of foremen and of workers toward the Graphic Rating

Method is of considerable significance. Shop Executives who have used the Graphic Rating Method have manifested a marked interest in the method and have given their hearty coöperation in preparing their rating reports. The statement of the purposes of the ratings is generally sufficient to arouse a foreman's interest in the possibilities of the rating method. Actual use of the scale together with a knowledge of his rating tendency, his agreement with another foreman, etc., then brings the foreman to realize the importance of the information the Rating Method has made possible. No cases of objection to the method on the part of superiors or subordinates have come to our attention.

The following experiences are illustrative:

1. A section head states that the rating scale made him give greater consideration to his workers as individuals in the assignment of work. This section head also attributes part of his own progress during the past year to improvement of his weak points as revealed by a use of the rating scale on himself.

2. One foreman who was not friendly to the rating scale when it was first introduced, voluntarily remarked at the end of three months that the scale had been useful in bringing the merits of his workers to the attention of the higher executives.

3. One executive states that the Graphic Rating Method has greatly assisted him in adjusting the wages of certain dissatisfied workers. This executive emphasizes the confidence he felt in making these wage adjustments in contrast with his feeling under similar circumstances when Graphic Ratings, Trade Test Ratings, etc., were not available.

Less tangible evidence is available concerning the attitude of workers toward the Graphic Rating method. A number of the workers voluntarily expressed their approval of the idea following the first periodic rating. One of these workers said that he wished he had known a year in advance just what qualities his supervisors considered to be important. He felt that he could have improved himself in those qualities he felt himself weakest in.

Analyzing Ratings and Training Raters

By Forrest A. Kingsbury, *University of Chicago*

EVERYONE who has worked critically with rating scales, in education, industry, or army, knows that ratings as ordinarily made are highly unreliable, and that only under what may be called ideally favorable conditions will they approximate accuracy, even on a scale so gross as one of five divisions. Rugg[1] has described such ideal conditions somewhat as follows: Ratings, to be reliable, necessitate, (1) averaging three independent ratings, each made on an objective scale; (2) these scales must be comparable and equivalent, made in conference under expert supervision; (3) the three raters must be competent to rate. How rarely these conditions are realized everyone who has ever attacked the rating problem knows only too well. Rugg's recommendation is that we would better give our attention to devising objective means of measurement, and that "we should discard these loose methods of rating once and for all."

But can we? The fact is inescapable that in much business personnel work there *is* no wholly objective method available, or even in prospect, for measuring many of the qualities and abilities that must be measured. Many occupations involve work of such specialized and varied character that comparative production records or trade-tests are out of the question. Yet semi-objective social, volitional, and moral traits, for which satisfactory standard tests are not yet in sight, constitute factors almost if not quite as important for vocational fitness in these occupations as items of knowledge and skill. In such fields, of which banking is an example, selection of individuals for promotion, retention, transfer, and other purposes *must* be made on the basis of appraisal of rather general character traits by responsible executives.

Most of the scientific work on ratings has been in the direction of evaluating and improving the mechanism of reporting judgments, i.e., the scale and system. But while the necessity of "competent raters" has frequently been mentioned, little has been said directly about methods of improving the judgments themselves. Yet it seems clear that an imperfect mechanism is not the chief source of unreliability in ratings. It is rather the lack of acquaintance of raters with the persons they are rating, or their failure to analyze and report carefully and accurately what they do know about them. This is the problem with which this report is concerned. More specifically, two

[1] H. O. Rugg, "Is the Rating of Human Character Practicable?" Journal of Educational Psychology, November 1921, to February, 1922.

particular steps in personnel rating are emphasized, viz: analyzing the ratings and training the raters.

The facts about which this discussion centers came from a rating-scale investigation undertaken some time ago in a large national bank, and which, after a long interruption, is again under way. With a scale devised for experimental purposes, sample ratings of about 450 employees had been made by their respective departmental managers, about 45 in number, when the writer was called in to make an analysis of these ratings. While the scale used proved later to need complete revision, it had nevertheless many good features and had been worked out with intelligence and care. Indeed, its character was such as to facilitate the revelation of many commonly recurring errors in rating which a different form of scale might not have revealed. The scale comprised a list of sixteen personal qualities, judged by bank executives to be essential for bank employees, together with a blanket-term, "Competency," meaning general fitness for the position. The sixteen qualities were: Vitality, alertness, enthusiasm, loyalty, initiative, judgment, adaptability, application, perseverance, accuracy, neatness of work, dependability, coöperation, courtesy, conscientiousness, and executive ability. Each quality was carefully defined in general terms. A five-point scale was used, the degrees of which were defined substantially as follows: Degree 1, individual decidedly deficient in the quality under consideration. Degree 2, individual somewhat deficient in this quality. Degree 3, individual possesses the quality in such degree as to arouse no comment. Degree 4, individual possesses quality to a somewhat marked degree. Degree 5, individual possesses quality to a decidedly marked degree. Departmental managers were asked to rate on a basis of observed performance and not of what they anticipated the employee might eventually become. They were asked to rate employees only on those qualities important for their jobs, and on which, presumably, they had opportunity to judge, and they were invited to qualify their ratings by special comments, which, however, were not often made.

No systematic attempt was made, in this analysis, to go outside the ratings themselves to check the validity of the estimates. No such checking up by outside criteria was necessary to prove the inability of intelligent executives to make reliable ratings. Indeed, not one of the forty-five or more sets of ratings escaped criticism. An intensive analysis, it was found, reveals as much about the rater as about those he rates, if not more; and by revealing the nature of common errors and individual misunderstandings and failures makes possible a program for training in making more reliable ratings.

Analysis of each manager's tendencies was facilitated by tabulation of all his ratings on a single sheet, permitting the comparison of his ratings of each employee in detail, and of his tendencies with reference to each of the seventeen qualities. Within each individual rating-slip the estimates of the separate qualities

were checked against one another and against the rating on competency. All questions, comments, and criticisms concerning the practices of each rater and his individual ratings were listed, together with a distribution curve of his markings in comparison with the normal probability curve. These were reviewed in private conference between the manager of the personnel department and the rater, so that every rater learned his precise types of error.

While the details of the analysis cannot be reported here, some of the methods used will be apparent from the enumeration of certain common errors which recurred so frequently as to indicate that they are among the more common sources of unreliability.

One's first impression is that many raters fail to realize the importance of this work, and fail to give it adequate time and care. Sometimes this is because the rater has never had brought home to him the fact that his job is not merely that of a superior clerk, but a determiner of departmental policies and a supervisor of personnel. He spends his day settling questions of detail which have been referred to him, instead of selecting the most promising clerks and training them to take that responsibility. Sometimes he goes about the distasteful task of making ratings in such perfunctory fashion that his carelessness is evident in his handwriting,—as in certain rating slips which showed columns of 3's made so rapidly that the pen was not lifted from the paper. The first obligation then is to make clear to every rater the importance of the task and to enlist his intelligent and careful cooperation. The necessity of urging him to take plenty of time and to review his first estimates is here indicated.

But even where care is exercised, it is in varying degree. Commonly the ratings are more carefully made on the more objective and easily estimated traits, like neatness and accuracy, than on the less objective qualities, such as loyalty, coöperation, etc. It is these latter qualities that must give us the most concern when we set about teaching the rater to analyze and abstract these aspects of behavior.

Akin to this is the frequent confusion between certain pairs of traits, which the rater frequently marks the same throughout the list of employees, indicating that he fails to differentiate the terms used. The fault may, of course, be in the rater's lack of clear thinking; but the probability is that the scale-maker is not wholly free from blame. If he forgets that few executives have had his training and practice in analyzing out and thinking of specific aspects of personality and performance while ignoring temporarily all other aspects, he will assume too much skill on their part and fail to provide sufficiently explicit instructions. He must supplement general description by specific examples of ways in which each quality is manifested. On the other hand, it is possible to fall into the opposite error and describe qualities and methods at such detailed length that the ordinarily intelligent rater is annoyed by the verbosity of the instructions and fails to study them carefully.

To discover the golden mean is a delicate task.

To get the rater to take an impartial, objective attitude toward the task and toward employees is another difficult undertaking. Biased ratings, due to conscious prejudice or partiality, are probably far less frequent than unintentional bias, traceable to some amiable quality in the employee, good appearance, tact, etc., or to a brusk manner, unpleasant voice, or other socially irritating trait. Thorndike[2] has discussed a form of this tendency under the title of the "halo," where an extraordinarily high rating on some one trait sheds such a luster over the other qualities as to raise the rating on them to an unwarranted degree. Only long training in analysis of personality can remedy this, although (as will be shown later) rating all individuals on a single trait at a time may be of help. Sometimes this partiality comes from the desire to conceal or minimize some real defect in an otherwise faithful employee. This is, of course, unfair both to employer and employee, since a revelation of the worker's weak points may conceivably lead to his transfer to another position, or to the correction of bad working conditions, or to the remedying of the defect itself, thus enabling him to make a better record and render more valuable service. Sometimes the fault proves to be rating a new employee or a youthful employee on expected rather than on actual performance. This of course renders the judgment wholly subjective and hence valueless as an objective measure of his present worth. It is better for a manager to refuse to make a rating, if he feels that he has insufficient evidence on which to make it, than to give one which is purely unverifiable opinion.

Wrong or changing quantitative standards constitute another common source of erroneous ratings. Like teachers, some raters are "high markers" and some "low markers." More managers were, in this investigation, observed to mark too high than too low. The dominant tendency can be detected by plotting the manager's ratings against the normal probability curve as well as against the combined ratings for the organization, and by insisting that he shall be able to give supporting evidence if he asserts that his group is markedly above the average. If his standards can be proved notoriously lax or rigid, this fact may call for a correction in the personnel office of all his ratings, by the addition or subtraction of a constant amount. But it would be a mistake to make such alterations without more evidence than mere non-conformity with the normal probability curve. In a small department the number of ratings available would be insufficient to warrant such inference, while in certain departments of central importance to the organization the staff may really be a hand-picked group. Moreover, the normal distribution varies somewhat with the quality in question and the way its degrees are defined. In any case, supporting evidence must substantiate the mere statistical principle to warrant making correction of ratings.

[2] E. L. Thorndike, "A Constant Error in Psychological Rating," Journal of Applied Psychology, 1920, IV: 25–29.

Distribution curves should be used rather as one of several instruments for detecting erroneous standards; and it seems probable, on the basis of the experience in the personal conferences, that managers can be brought to use it with some success in correcting their own erroneous tendencies. They should, however, be made definitely aware of its limitations as well as of its values.

A more troublesome sort of inadequacy of standard, because less easily discovered and corrected, is the tendency to raise or to relax one's standards during the rating process, so that a given degree does not always mean the same thing. The man-to-man comparison scale was designed in part to aid in correcting this tendency. It seems that the danger would be further reduced by having the rater mark his entire group on one trait before taking up another trait. The meaning of that particular trait-name will then be kept more definitely in mind and comparisons between individuals facilitated. Such a method, by focalizing in attention the individual quality instead of the whole personality should aid also in minimizing the "halo" phenomenon previously mentioned.

Fear of making invidious distinctions between employees is often revealed in too great uniformity of ratings. This again is made evident by a distribution curve. Unfortunately, we *do* have to make distinctions between people, and the rater should realize that it is not so disastrous to mark some employees 2 who are not much worse than some he marks 3, as it is to mark them all alike to avoid seeming to magnify the difference. A peculiar variant of this tendency, appearing quite frequent, is what may be called "stereotyped" ratings, where all or most employees are marked 3 on certain traits, 2 on others, and 4 on still others, with little variation among individuals from this type rating.

Another frequent phenomenon is the failure to analyze the better employees with as much care as the poorer. On the best employees 4's and 5's are apparently indiscriminately bestowed in all traits, significant or non-significant for the job. This is not hard to explain. The poor employee is a constant problem to the manager; his many faults and his few virtues are reviewed whenever the question of retaining or discharging him arises, and his personality gets fairly well analyzed by his supervisor. The employee who can be relied on to do efficient work without oversight, however, is really much less known in detail to the manager.

Evidence not infrequently appears that a manager has altered his original estimate because of some critical (even if not well-founded) comment by some colleague who sees his markings. It is desirable, of course, to have as many judgments as possible on each employee, but such judgments should be made independently. Collusion or coöperation in making ratings leads to compromises which conceal facts instead of revealing them, while independent but contradictory opinions afford a stimulus for a more searching inquiry, which is likely to bring significant evidence to light.

Of all the types of error noted in this investigation, perhaps the most common appeared as inconsistencies between ratings of an employee on the different traits of the scale. If an employee in an important clerical position rates 2 or 3 on accuracy, judgment, alertness, or other traits important for his particular job, but 4 or 5 on competency, an explanation is called for. Apparent inconsistencies are sometimes justifiable, but the rater should be able to explain them when they are brought to his attention. To learn to cross-check the details of one's own ratings is probably as hard a thing as a rater can be asked to do, although he usually sees its significance when brought home to him.

The erroneous tendencies that have been enumerated here do not, of course, exhaust the list. There are undoubtedly other sources of error as grave as these. But enough has been said to indicate the character of the task of analysis and training. Once the specific types of error are known, we are in a position to undertake their correction. While the methods suggested in connection with each type of error have not been finally verified, the general procedure seems to be clearly pointed out.

The outcome of the investigation thus far is a fairly definite program for training managers to rate. They must be taught both to observe and analyze the significant traits in each employee, and to report them with care and accuracy on the rating scale. A revised scale, details of which need not here concern us, is in preparation, comprising those qualities which a job-analysis, carried out since the rating experiment was begun, has shown to be significant for the various positions. This program is a rather intensive one. How far it can be successfully carried out remains to be seen. But the clearly demonstrable necessity of making the work of the departmental manager increasingly that of evaluation and analysis of personnel and supervision of their work warrants every effort to make this program as careful and thorough as possible.

A first step is the preparation of a raters' manual. This describes in detail the scale and proper methods of using it; it discusses the various personal qualities, their significance, the ways in which they are manifested, and ways of increasing one's reliability in judging them; it enumerates the typical errors which have been described above, and suggests ways of guarding against each.

After opportunity has been given for each executive to familiarize himself with the manual, a conference of all raters seems desirable. This will give opportunity for clearing up misunderstandings and answering questions, for impressing upon each manager the importance of devoting adequate time and care to the task, and for describing the program of training in such detail as seems advisable. A sample set of ratings is then to be made by each manager, and these are to be subjected to analysis in the way described. At the same time, additional ratings are to be obtained from all other executives who may be in a position to make them. While Rugg insists that not less than competent

raters must rate each individual, there are situations in which this is difficult if not impossible of accomplishment, as in highly departmentalized organizations of large size. But in some departments assistant managers do have sufficient executive responsibility and training to warrant their being asked to coöperate. The chief clerk (who is responsible for employment in the bank and who ordinarily is more conversant with the bank's personnel than any other one man) will know many employees well enough to rate them on certain traits at least, although in an organization of fourteen hundred employees this possibility has its limitations. In addition, incidental criteria of the efficiency of certain workers will be available, such as promotion history, record of errors, and other personal records. All these objective bases of comparison will be used to supplement the intensive analysis of the ratings. Criticism of his marks will be brought to each rater in personal conference, and a second series of sample ratings obtained, which will likewise be analyzed and compared with the earlier estimates. This process of analysis, criticism, and re-rating will then be repeated until the results seem, by whatever criteria are available, to reach a degree of reliability which will warrant using them for whatever purposes are desired, or until it seems clear that the manager cannot improve his ratings. Perhaps three sets of analyzed sample ratings will accomplish this; probably in some cases it will require more. It does not seem likely that a complete set of reliable ratings can be obtained with less than this amount of training. Such a program is not the work of a few days; but the importance of the task seems to warrant giving to it such time as it requires, if it takes months or even years.

To summarize: The problem of ratings is only in part one of scale and administrative technique. Reliability of ratings depends upon, and always must depend upon, the intelligence and care with which each individual rater observes the activities and product of each individual employee, the deliberateness and impartiality with which he generalizes upon his observations and checks them by further observation, and the care with which he records his judgments on the device provided.

A Method for Classifying the Jobs and Rating the Efficiency of Clerical Workers

By M. A. Bills, *Carnegie Institute of Technology*

IN THE following article we wish to describe in some detail an experiment in job classification, personnel rating and salary adjustment in a clerical force. This experiment was carried on in an office force of about 300 and its results have successfully been put to trial in that company. The plan has since been successfully used in two other companies.

The clerical force is in close contact on the one hand with a large factory and on the other hand with a large sales force. The factory has been fairly well standardized and the employees are being paid on an efficiency in production basis. Also in the sales force the men are being paid on the basis of production. In the clerical force however, there had been when we were consulted little standardization and no definite system of determining efficiency. This seems to be true of most clerical forces. As yet there is no measure of clerical production and no standards except in a few cases such as typists, file clerks, etc., and it is for this very reason that some type of classification and rating on efficiency is more necessary for clerical workers than for either factory or sales forces.

THE PROBLEM

The problem presented to us was so to analyze and classify the jobs in the clerical force that salaries might be paid throughout the entire force on an equitable basis.

The entire experiment was based upon four fundamental principles. First, that a job can only be successfully analyzed when a description of the job is carefully written. Second, clerical jobs can be classified into levels according to the degree of difficulty of the work. Third, that for each job, and therefore for each group of jobs there is a lower limit of salary below which one should not pay for that job, and there is an upper limit above which one cannot afford to pay for the work regardless of how well it is done. Fourth, that the efficiency of the worker should determine his position between the minimum and maximum salary for the job which he is doing.

In the above program there are two points of difficulty. Both of these have been successfully met:

1. There must be made from the job descriptions a suitable classification of jobs. This classification must

have the following requirements: First it must make the differentiation between the jobs easy, that is, the jobs must seem to fit clearly into one or another of the grades or classes. If two persons knowing the jobs equally well classify the jobs they should agree on at least ninety per cent of the cases. We allowed ten per cent for border line cases. Second, the classification should clearly differentiate between levels of difficulty. Each grade must be a step above the preceding grade. It would be possible to have a classification fulfill the first requirement and not the second as it might place jobs of unequal difficulty in the same class and jobs of equal difficulty in different classes, although the jobs would seem to fit clearly into the classes. Third, the classification should appeal to the clerks and the department heads as just and fair.

2. A scheme must be devised for obtaining a just rating of the efficiency of the clerks on their jobs. This rating must have three qualities. First, it must be a rating on the qualities vital to the efficiency of a clerk. Second, it must be the opinion of more than one judge on the efficiency of the clerk. Third, it must provide, as far as possible, for the elimination of individual tendencies of the raters to over or underrate.

PROCEDURE

In making the job analysis the method of procedure was as follows:

1. Each clerk was interviewed and from the interview a job description of his work was written. The job description was then O.K.'d by the clerk's immediate superior. It was then retyped and handed back to the clerk. The clerk O.K.'d it as it stood and handed it back, or he made any changes that he saw fit and handed it to his superior for his O.K. of the changes. Therefore, when we finally began the classification of the jobs we had in every case the O.K. on the descriptions of both the person doing the work and his immediate superior. The jobs were then carefully studied and a classification to fit them was drawn up, or rather changes in a classification that had been previously used in several companies were made in order to fit the grading to this particular company.[1]

All of the jobs were then classified independently by two people, both of whom had helped to make the analysis and had carefully studied the work throughout the entire office. Whenever disagreement arose it was settled either by a more careful reading of the job description or where that was unsuccessful by another interview with the clerk or his immediate superior. This classification was then taken to the manager of each department and O. K.'d by him. Here, also, whenever there was a disagreement as to the classification the job analysis card was carefully read. If there was still a disagreement all three persons involved went back to to the clerk or the immediate superior

[1] No classificaion can be carried over bodily from one Company to another and any attempt to do so proves disastrous, the general principle of the classification, however, has been successfully used in many companies.

of the clerk and talked over the job and made corrections on the job analysis card. The rule that we found absolutely essential was that *all classification must be made strictly from the job analysis card and not from any person's opinion or memory of the job.* From the department manager we then took the classification to the department head and the same procedure was followed as with the department manager. When the department head had O.K.'d the classification we had then carried through on the analysis of the work every one from the clerk doing the work to the highest director of that work.

It then became necessary to set the salary limits for each grade of work. This was accomplished by taking three factors into consideration. (1) What the company as a whole was paying at that time for each grade of work. (2) What other companies throughout the town were paying for that grade of work. This last could only be accomplished by hitting the high points in the classification. For example, a typist is a fairly standard term throughout all offices and if we asked other firms what they were paying a typist we were fairly sure of getting a satisfactory answer. In the same way we could get the salaries of file clerks if we were careful to specify that we only referred to clerks doing numerical and alphabetical filing. On the other hand, it would be wholly hopeless to ask for the salary being paid to a bookkeeper, for in some companies a bookkeeper's job is one of simple transcribing from records into a ledger, while in other companies the title of bookkeeper refers to a man who keeps and distributes rather complicated accounts. (3) Our third source of information was the salary paid by other companies who had used practically the same classification. Since these companies were located in different localities this could not be done directly in dollars and cents but by taking the lowest entrance wage as a basic wage for each company and running the per cent paid for each one of the classifications over and above the basic wage, we were able to obtain a fair idea of what the rate of increase was throughout the classification, for different companies.

After the salary limits had been successfully set the next step was to determine for each individual clerk the salary that he should receive, lying somewhere in between the minimum and maximum salary for the job. A graphic rating scale was adapted from rating scales that had previously been drawn up and used by the Bureau of Personnel Research, and each clerk was rated, first, by his immediate superior, and second, independently by the next superior. For example, in a department where there were clerks, section heads, division heads, and a manager of the department a clerk was rated by the section and the division head. The section head was rated by the division head and the manager. The division head was rated by the manager and the department head. The manager was rated by the department head only.

The important thing in getting just ratings was to sell the idea properly to the persons doing the rating. A letter was sent out to all those who

were to rate, with a list of clerks whom they were to rate and a set of instructions. This letter covered the following points:

It stated that the rating of the individuals working under them was as much a part of their job as any of the other work that they were doing.

That it was a particular kind of job and that just as they had to learn the work that they were doing they would also have to learn how to rate. That as the ratings were to be used to determine the salary to be given each person, it was necessary that they be carefully done, also that perfect results were not expected the first time the ratings were handed in but that the ratings were to be done once every six months and that it was hoped to develop a group of men who could successfully rate their employees. There was, as a whole, hearty coöperation throughout.

For different types of work the different items on the rating blank were weighted differently. For example, accuracy was weighted more for clerks doing individual work and less for those having supervisory duties, while ability to get along with others was weighted less for those doing individual work and greater weight was given it in the jobs requiring the supervision of others. The graphic rating scale was evaluated and the total rating of the individual found weighted according to his particular job. The theory was that his salary was then to be set according to this rating. If, for example, his rating was 70 out of a possible 100 he would then receive as a salary the minimum salary paid for his kind of work, plus 70 per cent of the range between the minimum and maximum salary. For example, if the minimum salary was $15 and the maximum on that particular job $20 and a person received a 70 per cent grade in efficiency he would receive $18.50 a week.

However, it was found that although the raters had been given most specific instructions as to the proper distribution of ratings there was a tendency throughout to overrate and that some raters tended to overrate more than others. As far as could be determined the efficiency of the clerks was about the same throughout the company. Therefore, it was decided to make a cut in all of the ratings so that they would group themselves equally around the 50 per cent mark, that is, each man's rating was thrown into a frequency distribution curve.

After the proper cuts had been made in the ratings the principle as described above of determining the actual wage to be paid each individual clerk was carried out.

CLASSIFICATION

The clerical classification used is based on two fundamental principles. The first of these principles is that for every clerical job there are three operations, the doing of the work, the checking of the work, and the supervising of the work. The second principle is that the difficulty of the job can be graded on, first, the work done, and second the knowledge necessary to perform that work.

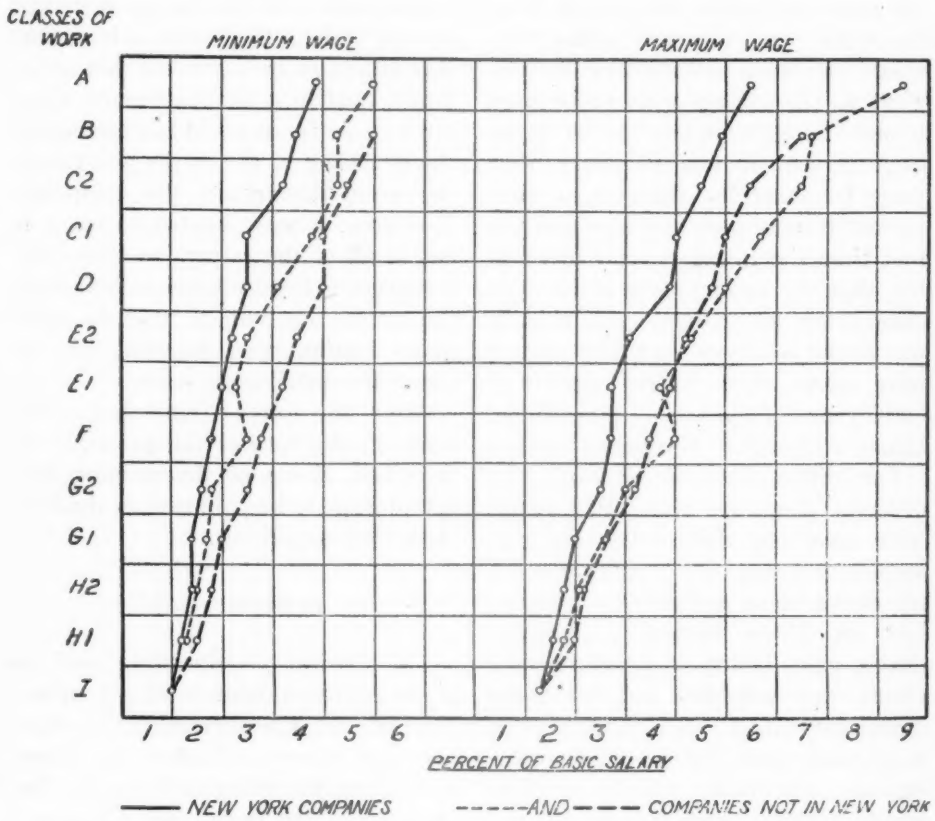
The classification used runs from A to I. Of these divisions A, B, D and F represent supervisory work.

The other divisions represent individual work.

In the I group we have placed the office boy job. Here there is very little difficulty in classification as the office boy is a fairly standard term.

slight alterations in the material, such as simple multiplication, for example, the simple multiplication of a base rate by integrals, and where it is only necessary that a few rules be understood. In no case did we class a

INCREASE OF SALARY VERSUS CLASSIFICATION



In the H class we have put those jobs that require only manual dexterity and identification. Under this are included all those jobs where there is simple copying of material from one card, paper, or book to another card, paper, or book; where there are

job as an H job that required the knowledge of a large number of rules or regulations. H-1 is the doing of the work and H-2 is the checking of the same.

In the G group we have placed those jobs where the knowledge of a large

number of rules is necessary but where each one of the rules is definite and specific, and where no cases need to be covered that have not previously been covered. The G job differentiates itself from the H job in that a large number of rules must be known and it differentiates itself from the E job, which is the next individual work job, in that no cases not previously covered are acted upon.

F is the first supervisory group. We have graded all supervision on two items; first, the number of people supervised and, second, the kind of work supervised. The F group of supervisors are those who have supervision over a small group of H, I, or G workers.

The E class includes those jobs that necessitate the intensive knowledge of a limited field of work and the acting upon cases that have not previously been covered. The E group differentiates itself from the G group in that an entire though limited field must be covered and from the next individual work group C, in that only a limited field and not the general field of the business as a whole must be understood. E-1 is the doing of the work and E-2 either the check of E-1 work or the adjusting of difficulties in it, or the handling of more complicated cases which come up.

The D group is the second supervisory group and may consist of supervision over either a large group of I, H, and G clerks, or a small group including E clerks.

The C group includes those jobs where general information of the business as a whole is necessary for the carrying on of the work, or where unusual technical training is required. C-1 is the doing of the work and C-2 is the checking of it or as more often is the case, the handling of the more difficult cases and the adjustment of difficulties that arise in the C work.

B is a supervisory group. It consists of jobs demanding supervision over a large group of H, I, G, F, and E workers, or a small group of workers, including C work.

A is another supervisory group, including supervision of B work.

The classification used follows:

CLERICAL CLASSIFICATION

I. Office boys, messenger service, simple clerical duties such as simplest sorting etc., handling simple machines, such as letter press etc. Major portion of time on messenger work.

H. Simple operations requiring identification and manual dexterity. This requires the use of a few definite rules. It includes those jobs where only a regular and definite change is made in the material handled and in no case includes jobs where a large variety of rules must be understood and applied.

1. Simple filing or transcribing, or machine operations requiring no technical knowledge (such as addressograph).
2. Checking above work, responsibility for small unit of same, or doing above work without subsequent check.

G. Operations requiring indentification and manual dexterity and in addition, assembling, combining or simple calculations, (following a variety of rules, which are however, very definite and specific).

1. Transcribing which involves work of the above nature, or a variety of B-work, or work requiring subsequent follow-up. Subject filing.
2. Checking or adjusting difficulties in the above work.

F. First grade supervision. Supervision of I, H, or G work in small groups.

E. Operations of classification, examination, review, compilation, of calculation, other than simple involving complete and intensive knowledge or a restricted field.

1. Operations involving the intensive knowledge of a restricted field and the taking of action on cases not definitely covered previously or the making of other than simple calculations.
2. Checking, handling of papers where question has arisen and adjustment of difficulties in the above, making of special calculations or performing the more complex E-1 operations, or conducting correspondence in a restricted field.

D. Has complete charge of small unit of work in Class E or a large unit of lower grade work, or assists in supervision under A of E grade work or lower.

C. Operations requiring knowledge of the general principles of the business or some other general field and involving analytical thought.

1. Has at command and applies general rules or principles to cases not previously covered, or uses information which can be acquired only outside of Company, or persons who, through long experience with the Company, have acquired and are exercising knowledge of the general principles of the business.
2. Same as 1, only handles more complicated cases.

B. Supervision of any C work or a large unit of lower grade work.

A. Including supervision over B, or highly technical work for which special training is necessary.

Typists, stenographers and secretaries were drawn off into a separate classification.

In using the above classification we adhered to the following rules:

First, if a person did both individual and supervisory work the job was classified separately on each and in the final analysis was placed in the higher of the two classes.

Second, all persons were given the highest rating that they earned on any work that they did to any considerable extent. That is, if a person did mostly G work and only did E work once a month he would be given the G rating, but if the E work was such that it took any considerable portion of time he would be given the E rating.

RATING SCALE

The rating scale that was used to determine the efficiency of the individual clerks on the job is shown on page 391.

The proper weighting of the separate items on the scale was obtained by consultation with ten division heads who from long experience were intimately acquainted with clerical work. The following tables shows the weighting of the items first for clerks doing individual work, and second for clerks doing supervisory work.

QUALITY	WEIGHT FOR INDIVIDUAL WORK	WEIGHT FOR SUPERVISORY WORK
I	10	10
II	20	20
III	25	10
IV	10	10
V	20	5
VI	7.5	10
VII	7.5	10
VIII	0	25

The following may be noted:

Appearance, ability to learn and dependibility are weighted the same for both types of workers. Accuracy

GRAPHIC RATING SCALE FOR CLERICAL WORKERS.

Name _____ Date _____
Dept. _____ Section _____ Name of Rater _____
Position _____ Position _____

Instructions for making out this report: Before attempting to report on this employee it is necessary to have clearly in mind the definitions of the qualities which are to be reported upon. In each quality judge this employee and place an X somewhere on the line running from right to left that will indicate approximately this employee's standing in that quality. It is not necessary to put the X directly above any of the division points. Judge employee on present job only wherever possible.

QUALITIES	REPORT
I. APPEARANCE. Consider neatness of person and dress.	Appropriate — Neat — Ordinary — Passible — Slovenly
II. ABILITY TO LEARN Consider ease of learning new methods.	Very quick — Catches on easily — Needs repeated instruction
III. ACCURACY. Consider quality of work, freedom from errors.	No errors — Very careful — Few errors — Careless — Many errors
IV. DEPENDABILITY. Consider how well he can be relied on to do his work without supervision.	Very reliable — Trustworthy — Usually reliable — Unreliable
V. SPEED. Consider amount of work accomplished.	Very Rapid — Moderate — Slow — Very slow
VI. COOPERATIVENESS. Consider his ability to work with others.	Cooperative — Falls in line — Difficult to handle — Obstructive
VII. CONSTRUCTIVE THINKING. Consider his ability to grasp a situation and draw the correct conclusions.	Shows originality — Resourceful — Carries out suggestions — Needs detailed instruction.
VIII. ABILITY TO DIRECT WORK OF OTHERS Consider ability to direct work and gain cooperation.	Gets maximum efficiency — Directs work without friction — Secures limited cooperation — Wastes manpower — Antagonizes

is weighted much heavier for the individual worker than for the supervisor. Again speed is more important for the individual worker than for the supervisor, while coöperativeness, constructive thinking, and ability to direct the work of others is more important in the work of a supervisor than in individual work.

RESULTS

(1) Putting the above described scheme into force resulted in about 200 raises of salary. It would naturally have led to about 80 decreases in salary but the company did not make these. Under these conditions, saving to the company will only result after several years. Gradually as those that are overpaid now leave the jobs, they will be filled by persons whose salaries will be determined by the given method, and no further exceeding of the maxima will be allowed. Two hundred is an abnormal number of raises as compared to other companies where the classification has been used. (2) It has been accepted by the company as a fair and just arrangement. (3) It has been accepted by the clerks as very fair and has increased the contentment by increasing the feeling that they are being paid on a well considered basis for the work that they are doing. (4) It has laid a basis for system work that may be carried on later. (5) It has laid a basis for the working out of definite lines of promotion throughout the company. (6) It has made transfer from one department to another easier since both the clerk and the department heads can be definitely shown that the suggested change either is a promotion or will lead to a promotion.

A few facts developed during the study that may be of interest. (1) The salaries in New York for low grade work are higher than they are elsewhere. (2) The salaries in New York for the higher grade clerical work are lower for exactly the same work than they are elsewhere. Chart 1 gives on a percentage basis the increase of salary from the lowest to the highest grade work for three companies. It will be seen from this that while the highest salary paid in a New York company is only about five times the basic salary in the other two companies it is at least seven times the basic salary. The chart would look much the same if actual dollars were given instead of per cents. (3) The correlation between efficiency rating and length of service is + 0.60. (4) We find by far the greatest range in length of service in the G-2 jobs, that is, the highest class of routine work. This shows very clearly that a group of clerical workers have reached their limit and cannot be promoted farther.

SUMMARY

The following points are, we believe, noteworthy in the above procedure: (1) That the classification was successfully made only when the persons doing the classifying did so on the basis of the written job description and not from their general opinion of the job. (2) That the classification is not only logical but entirely practicable; that one similar to it with only such modifications as would

naturally arise from the difference between companies, has been used successfully in several firms; that it gives not only an easy differentiation of jobs but also one that is generally recognized by the workers as fair. (3) That the system of rating has proved most useful but is still in an experimental stage. The rating scheme is to be revised and we hope improved before it is used again. The chief point of difficulty is the tendency of all individuals to overrate and of some individuals to overrate more than others. (4) That salary limits for the various classes can be determined and gives the one feasible way at present of comparing the salaries paid by different companies in the same or different localities.

We would say that the chief contribution of the article is a logical classification of clerical work that is likewise practicable and *will work*.

News Notes

MENTAL ADJUSTMENT IN INDUSTRIAL SOCIETY (SERIES BY ELTON MAYO)

The forthcoming number of the JOURNAL OF PERSONNEL RESEARCH will initiate a series of articles by Elton Mayo, late of the University of Queensland, dealing with the psychiatric approach to personnel problems in modern industry. Mr. Mayo has been working for a number of years on psychiatric problems and is specially interested in their implications for industry. He is at the present time with the Department of Industrial Research at the Wharton School of Finance and Commerce, University of Pennsylvania. The first of Mr. Mayo's articles is entitled, "The Irrational Factor in Society." The second, which is to appear in the February number of the JOURNAL OF PERSONNEL RESEARCH, is entitled, "Irrationality and Revery."

INDUSTRIAL SAFETY CONFERENCE

The sixth Industrial Safety Conference of the State of New York which was held at Buffalo, November 21, 22 and 23 under the auspices of the State Department of Labor, was the most successful gathering of this kind that has ever been held, according to the November issue of "The Industrial Bulletin." The underlying theme of the conference was "Elimination of Waste in Industry," but the whole field of industry was entered into in the discussions of the various papers that were given. Industrial Commissioner Sayer opened the conference with an address on the above topic. W. D. Baldwin, chairman of the board of directors of the Ohio Elevator Company, followed with a comprehensive review of the "Forward Steps in Industry" taken by New York State in the last quarter of a century. There were short addresses by Hon. John D. Higgins, Chairman of the Industrial Board, Richard H. Curran, a member of the board, and Dr. R. M. Little, director of the New York State Bureau of Vocational Rehabilitation.

At the Wednesday morning session L. W. Wallace, vice-chairman and engineer of the National Committee on the Elimination of Waste and executive secretary of the Federated Engineering Societies of Washington, D.C., gave a masterful address on "Wasteful Industrial Habits," and M. F. Simmons of the General Electric Company of Schenectady, talked on "How to Prevent Waste in Industry." The afternoon session was opened with a paper by General R. C. Marshall, Jr., general manager of Associated General Contractors of America, Washington, D. C., on "Waste Prevented by Improved Buildings, Equipment and Processes."

Two interesting addresses were heard at the Wednesday Evening Session. Arthur E. Morgan, president of Antioch College, spoke on "Education for Industrial Leadership" and Arthur E. Pound, on "The Iron Man and the Human."

Thursday morning, Sherwin Rogers, industrial correspondent of The Outlook, spoke on "Waste Eliminated by Mutual Respect Between Employers and Employees" and in the afternoon the first speaker was H. C. Blagborough, Industrial Relations Manager of the H. H. Franklin Company of Syracuse, who talked on "Brain and Muscles." John L. Train of The Utica Mutual Insurance Company followed with a paper on "The Cost of Industrial Accidents," and David Van Schaack, Director of the Bureau of Inspection of the Aetna Casualty Company of Hartford, Connecticut, spoke on "Industrial Accidents Can Be Prevented." Arthur H. Young, manager of Industrial Relations for the International Harvester Company, contributed a paper on "How Industrial Accidents Are Being Prevented,"

and Harold A. Ley, president of the Fred T. Ley Company of Springfield, Mass., and Edmund N. Huyck, president of F. C. Huyck and Sons, Albany, N. Y., discussed "Waste Through Preventable Sickness."

COMMITTEE ON THE ATMOSPHERE AND MAN[1]

Readers of the JOURNAL OF PERSONNEL RESEARCH will recall that Volume I, No. 1 of the JOURNAL contained a brief account of the organization and plans of the Committee on the Atmosphere and Man. As stated, at that time, the Commtttee was organized by the National Research Council through its Divisions of Biology and Agriculture, and Medicine and operates through three sub-committees: namely,

1. Committee on Atmosphere and Mortality.
2. Committee on the Industrial Effects of the Atmosphere.
3. Committee on Experiments.

The following account of the work of this Committee is taken from its first annual report, as issued in November, 1922. The report embraces the results of the work of the Committee with reference to the following topics, together with a financial statement of the Committee's expenses and a number of recommendations for future work.

Variations of influenza from city to city
Mortality in New York City
Factory records
Laboratory experiments

The Variation of Influenza from City to City

Prior to the present investigation, Pearl, supplemented by Winslow and Grove, had shown conclusively that the virulence of the influenza in different cities in the United States in 1918 had no appreciable relation to any of the following factors.

1. Age distribution of the population.
2. Sex distribution of the population.
3. Density of population as measured by number of persons per square acre within city limits.
4. Latitude.
5. Longitude.
6. Rate of growth of population from 1900 to 1910.
7. Distance from Boston where epidemic first broke out.
8. Degree of excellence of the public health service and of sanitary measures in general as measured by the normal death rate from typhoid fever.

This left the physiological or biological character of the population and the conditions of the weather and climate as the only factors of likely importance, yet to be investigated.

A careful statistical analysis, carried on for the Committee by Dr. G. A. Cole and Mr. E. C. Donnelly at Clark University, led to the discovery that the severity of the epidemic, as measured by the death rate from influenza and pneumonia during the 10 weeks after the onset in each of the 36 cities for which data are available, is closely correlated with the weather. Investigation of climatic conditions showed that warm moist weather immediately before the onset of the epidemic was apparently a potent factor in causing a high death rate. A high relative humidity just before the onset also aggravated the disease, presumably by making it easy for the bacteria to be transmitted from person to person. Variable temperature and especially a cold wave immediately after the onset checked this epidemic somewhat, while cool weather at the climax helped to hasten its rapid decline.

Further analysis of the relation of the weather to the physiological characteristics represented by the death rates from different diseases in the various cities indicated that

1. The prevalence of tuberculosis in a community had absolutely nothing to do with the death rate during the epidemic.
2. There was a possible relation between the normal death rate in the various communities and the death rate during the epidemic.

[1] Due to the fact that the report of this Committee has not been in active circulation, more space is given to the following account than might otherwise have been justified.

3. There was a marked relation between the normal death rate from diseases of the heart and the death rate during the epidemic.

The final conclusion of the investigation regarding influenza was that when the most searching of all known methods of analysis is applied to the influenza, all man-made conditions of environment are found to have had no effect upon the severity of the epidemic. So far as physiological conditions control the general death rate and the death rate from organic heart diseases they may have had some effect on the epidemic. But the one outstanding factor which appears certainly to have had a pronounced and dominating effect is the weather.

Mortality in New York City

This investigation of daily mortality in New York City has not yet reached so advanced a stage as has the study of influenza, and much remains to be done. A preliminary analysis by means of diagrams shows that the relationship between the death rate and the weather is extraordinarily close and is often of mathematical precision.

Factory Records[2]

The problem of obtaining reliable records of the work achieved by individuals in factories and of the conditions of the atmosphere where the work is actually being done has proved more difficult than was at first anticipated. This is not because of any lack of interest on the part of the factory management, but merely from the innate difficulties of starting something new. Practically everywhere the responsible heads of factories have shown the greatest interest in the problem and have been ready to cooperate in every possible way. Many have undertaken to do more than the Committee asked. The Chairman of the Committee was obliged to make two long trips ranging from Boston to St. Louis, and many minor trips entailing in all some five weeks of solid time. Dr. Thompson also made a trip extending from Washington to St. Louis, Dr. Ryan from Waterbury to Chicago, and Professor Landburgh some shorter trips. All this is necessary because it requires at least two or three visits to a factory to insure a good record.

As a result of all this work records of a high degree of accuracy are now being kept or will at once be begun, in the following factories:

Dennison Manufacturing Company, Framingham, Massachusetts
Acme Wire Works, New Haven, Connecticut
Curtis Publishing Company, Philadelphia, Pa.
Eastman Kodak Company, Rochester, N.Y.
Joseph and Feiss Company, Cleveland, Ohio
Westinghouse Electric Company, East Pittsburgh, Pa.
Richardson Paper Company, Lockland (Cincinnati), Ohio.
Ford Motor Company, Detroit, Michigan
Packard Motor Company, Detroit, Michigan
Burroughs Adding Machine Company, Detroit, Michigan
Sears Roebuck Company, Chicago, Illinois
Brown Shoe Company, Dixon, Ill.
Brown Shoe Company (two factories) St. Louis, Mo.
Cupples Company, St. Louis, Mo.
Brown Shoe Company, Murphysboro, Illinois.

In addition to these sixteen factories three others in Lynn, Mass., Rochester, N. Y., and Cincinnati, Ohio, will probably soon undertake the records, and it is expected that at least one factory near New York will soon coöperate. The northeastern United States will thus be adequately covered by factories of the highest grade. The need now is to find two or three factories in far northern cities such as Montreal and St. Paul or Minneapolis, four or five in the southern states, about three in the western plains or Rocky Mountain regions,

[2] Because of its particular interest to personnel workers this section is given in the form in which it appears in the original report.

and three or four on the Pacific Coast. It is difficult to find the right factories, for the requirements are exacting. The factory must be large enough so that a group of at least twenty and preferably forty or fifty people are working under approximately the same atmospheric conditions and are engaged either in piece work or in some other form of work where the daily product is accurately measured. In general it is necessary that the amount of work done per day should depend on the ability and feelings of the operative rather than upon the assignments made by the management. In the Ford Plant, however, an experiment is being made under conditions where the exact amount of work per day is laid out a month in advance. In this case the management has undertaken to keep records of production both in the morning and afternoon. The assumption is that if people feel well, either because of the weather or for any other cause, they will work fast in the morning, finish more than half the day's assignment, and loaf in the afternoon. If they do not feel well they will loaf in the morning and then perhaps over-exert themselves in the afternoon in order to make up the day's quota. It seems wise to attempt such a record because the committee's purpose is to determine whether the effects of the weather, which are very clearly evident in factories where there is straight, unrestricted piece work, are also evident in places where there is the opposite extreme of great rigidity in the daily requirements.

Another reason for the difficulty in finding just the right factories is that steady work throughout the year and as little seasonal variation as possible are essential. It is impossible to avoid some seasonal fluctuations due to the exigencies of each individual factory, but having records from factories of various kinds and in many parts of the country, these local irregularities can be eliminated or allowed for. Still another requisite is that the factories where records are kept maintain high standards in the matter of accounts and in the measurement of work. Unless careful time studies have been made, it is impossible to utilize workmen who do more than one operation. It is noticeable that the factories which are coöperating with the Committee are all of unusually high grade.

The Committee is fortunate in a mutually profitable arrangement into which it has entered with the Taylor Instrument Companies of Rochester. The Taylor Companies believe that the importance of the air has only to be realized to cause a great increase in the use of thermometers. Therefore they have agreed to supply the Committee with the most efficient type of recording dry and wet bulb thermometers. The instrument has a motor driven fan which blows a steady current of air over both thermometers; a clock drives a disk which is changed once a week. The instrument is listed at $250 and is highly satisfactory. From one to three have been installed, or will soon be installed in each of the factories and other plants mentioned above.

The main work of interpreting the factory records will not begin until data for a complete year are available, when the records will be tabulated and analyzed exactly as have been the influenza records.

Laboratory Experiments

Work along this line has been the slowest to take concrete form, and there is great need for men and funds, though the Committee has been able to coöperate with various workers, including especially the Laboratory maintained at Pittsburgh by the American Society of Heating and Ventilating Engineers in coöperation with the United States Bureau of Mines and the United States Public Health Service.

INTERNATIONAL LABOUR REVIEW

The International Labour Review of November, 1922, Vol. VI, No. 5, reports as follows in its section on Industrial Relations.

The industrial depression is still a dominant factor in the trade union movement and membership in the British Trades Union Congress has fallen by a million and a quarter since last year, and there has been a similar depletion in the ranks of the Confederation Genèrale du Travail.

Attempts to settle demarcation disputes and difficulties of internal administration and so to increase the power of resistance to excessive wage reductions or extension of hours are being made by the development of industrial unionism.

The demand for worker's control of industry is less generally advanced now than in more prosperous times, though there is evidence of interest in the guild movement.

The Trade Union movement as a whole is evidently beginning to concern itself with its young members aged from 14 to 20. Witness of this is the meeting on August 21 at Salzburg of the committees of the International Federation of Young Workers, and of the International Association of Young Socialists at which delegates from 15 organizations and representatives of the International Federation of Trade Unions were present.

Consideration of the field of Employer's Organizations shows certain wide-spread demands for a longer workday. At the same time the British Federation of Master Cotton Spinners has decided to organize systematically the working of short time in the Lancashire cotton spinning industry.

Two recently published books on employers' associations—Die volkswirtschaftliche Bedeutung der deutschen Arbeitgeverbände, by Mr. Otto Leibroch, and Employers' Associations in the United States, by Professor E. C. Bonnett.—furnish material for a striking contrast in methods of organization.

* * *

In the section on Education is reported the work of the Vocational Guidance office of Strasburg, of the Institute of Applied Psychology, at Halle-on-Saale, and the Apprenticeship Councils in Switzerland. Notes are to be found on Vocational Guidance in Poland, on the work of the United States Federal Board for Vocational Education, on Agricultural Training for Boy Scouts in the Transvaal and on Technical Education in Bengal.

The foundation of an Institute of Industrial Psychology in Japan is reported. News from both France and Germany witnesses the development of organized labour's interest in Vocational Guidance.

The December number in particular has a lengthy description of the Austrian attempts to meet the problems of vocational guidance—attempts which are very recent, but appear to be very well thought out. The Ministry for Social Administration is the component authority for dealing with vocational guidance, but under the new Federal Constitution of October, 1920, the State Governments are responsible for detailed legislation.

The Third International Conference on Psychology as applied to Vocational Guidance, organized by the Umanitaria Society, was held at Milan, October 2–4, 1922. The Conference was intended mainly to draw the attention of official bodies and the general public to the new science of vocational guidance. The Conference brought out the necessity for the international standardization of tests and of terms used by psychologists and others in this field.

UNITED STATES DEPARTMENT OF LABOR

Recent statements from Secretary Davis of the United States Department of Labor deal with some of the current features of immigration and naturalization work. The following are among his specific recommendations:

1. Training for citizenship for unnaturalized aliens. It is estimated that there are 7,000,000 aliens of this class in the United States and urged that something should be done on a national scale to make these potential citizens, actual citizens. The belief is advanced that a program for such training is a Federal concern and that it could be advanced without interfering with the doctrine of states' rights.

2. It is urged that immigrants seeking admission to the United States should be examined and given a certificate of qualifications in their home countries. Such examination should be carried out by United States agents. The following specific tests are recommended:

a. Blood test.

b. Physical test as to strength and general bodily condition.

c. Mental test intended to reveal defectives and pathological cases.

d. Test or certificate of character and standing.

3. There is a recommendation for more facilities at the large ports of immigrant entry, specific reference being made to the difficulties being encountered in enforcing the laws restricting oriental immigration.

4. Reference is made to the work of the United States Employment Service. It is stated that 2,500,000 workers were listed and that 1,500,000 were placed through this Service.

5. A strong appeal is made for the Conciliation Service of the Department of Labor. It is estimated that at the initiation of the Service 70 per cent of the cases brought to its attention had already reached the stage of strike, and that at the present time only 30 per cent of the cases brought up have reached a point where work has been suspended. A plea is made for a larger appropriation for this Department to permit the extension of its work.

6. An amendment to the Federal Constitution to enable Congress to fix standards that would take a million and a half boys and girls of school age out of the drudgery of mine and mill, and field and factory is recommended. These one million and a half children are the victims of a system which is killing their effectiveness as future men and women. Forty-two states have highly developed and rigidly enforced child-labor laws. Manufacturers in these states complain that they receive unfair competition from manufacturers in states with no such laws. To meet the situation, Congress should be given the power by Federal amendment to establish a Federal minimum child labor law leaving the States the right to raise, but not to lower, the standards of this law.

* * *

A recent report of the Children's Bureau of the Department of Labor indicates that the burden of unemployment falls heavily on the shoulders of the children of the unemployed. During a period of unemployment, the child receives much less nourishment and care than during more prosperous periods. The family spends less for food, fuel and clothing. Further, the mother and older children must obtain employment. As a result the younger children receive little or no care, the education of the older children is suddenly stopped, and the home is destroyed. Pensioning mothers to take care of dependent children in their own homes seems to be the only remedy for this situation.

Book Reviews

LABOR TERMINOLOGY

By the Bureau of Business Research, Harvard University, Cambridge. Published by the Bureau at Cambridge. 1921. 108 pp.

REVIEWED BY DAVID R. CRAIG

A proper definition is never arbitrary. Two statements which disagree in defining the same thing cannot both be right. A definition explains the thing it is defining in terms which are better understood than the thing itself. Presumably it states all of the meanings commonly attributed to that thing. The different meanings which attach to a single word or phrase must all be included in any thoroughgoing definition.

Judged by these criteria, this little book approaches real definitions more nearly than one might expect from the modest claims contained in Director Melvin T. Copeland's foreword. "This bulletin," he says," does not aim to present the viewpoint of employers or unorganized labor, but to give definite meanings to terms used by labor union members in order to assist employers and prospective employers to understand the organized labor point of view." But the viewpoint of employers is so frequently included in the definitions that they present not the labor view only, but also the employers'; and so the bulletin constitutes an approach to a series of complete definitions.

The volume is an excellent one and should serve its purpose well. So many words and phrases are defined, and so few have been omitted that might have been included, that one wonders how the words were arrived at and wishes that the method had been indicated.

We may quarrel as individuals with some of the definitions. *Conciliation* and *mediation* do not seem to be interchangeable synonyms. *Boring from within* is a phrase often applied by conservative groups to the process by which their purposes become more radical—and not all labor unions will agree that this is "undermining the membership." And although a *layoff* is perhaps technically a temporary cessation of employment and does not constitute a permanent discharge, nevertheless in practise in many cases an employee, laid off because of lack of work, is never reemployed; and thus the device becomes a discharge-substitute.

In any revision of the volume the Bureau will doubtless wish to insert some omitted items. *Armed guards* is a phrase brought into prominence since the compilation was made. The Coronado decision could be adduced to modify the paragraph on *Incorporation of labor unions*. The word *laborer*, which means unskilled laborer to many industrialists, might well be included. *Time* in its slang sense of *payoff* might be interpreted and illustrated. The "American standard of living," mentioned without comment in defining the *living wage*, is likely to be a potential source of misunderstanding unless its attributes are more closely specified. In such a revision the Bureau might wish to sprinkle the illustrations with greater uniformity, and could safeguard itself from the criticism of union apologists by greater care in cross-referencing. As it now stands, the definition of *blacklist* finishes "See *boycott*," but the definition of *boycott* does not say "See

blacklist." Similarly the *closed-shop* paragraph refers the reader to the *non-union shop*, but neither the *non-union* or the *open shop* definitions refer to the closed shop.

But these are only those crudities incident to pioneering against which the reader is warned in the foreword. They mar only slightly what is in reality an excellent and needed study. If employers generally will read it, they will be able to avoid those misunderstandings that arise from not knowing what labor is taking about.

THE CAVEMAN WITHIN US

By William J. Fielding. E. P. Dutton. 1922. Pp. xv + 363

Reviewed by Donald G. Paterson

Personnel directors and all others concerned with the selection and placement of brain or hand workers will be interested in the novel suggestions put forth in this book concerning ultramodern ways of putting the right man in the right place. We find it suggested in the chapter entitled "The Caveman's Passion" that many fetichists enter a business which gives them the maximum opportunity, some becoming shoe salesmen to realize their aim. Those that have exhibitionist tendencies find their desires fulfilled in acting, public speaking, lecturing, demonstrating or other callings of this general nature. Those with sadistic tendencies should apply them in socially useful ways by entering surgery, dentistry, the butcher business and a variety of other callings. The masochistic trait enables one to render valuable service at the cost of pain or personal sacrifice, such as nursing or administering to the afflicted. You will understand, of course, that these are only broad general suggestions. It would seem eminently desirable to analyze all jobs in commerce and industry, rate each job in proportion to the demands it makes upon these caveman tendencies, set up job specifications with these qualifications definitely stated and then "caveman-analyze" each applicant to see how he stacks up to the requirements of the job he is applying for. This is an alluring field of research! It is irresistible.

Now, a word or two about the book in general. It is difficult to review in detail a book that is well-nigh encyclopedic in the range of topics covered. It is like a high school dictionary, however, in its treatment of those topics. In fact, the 90 odd subjects included, ranging from "Man's Great Antiquity" to the "Ductless Glands," "Mental Recapitulation" to the "Psychology of Radicalism," "Insanity in Retrospect" to "Dissociated Personalities," "Phallic Worship" to "Religious Genius," etc., ad infinitum, is a guarantee of the superficiality of this book. Superficiality, however, is not a crime, nor even a misdemeanor. Nevertheless, it is irritating to find a book so full of references and quotations from innumerable authorities with little or no effort made to distinguish between those worth quoting because of acknowledged scholarly attainment and those beyond the scientific pale. One can easily imagine the surprise of several of these authorities were they to see some of the statements that have been attributed to them. For example, John Dewey and E. L. Thorndike would probably be amazed to discover that they are quoted as saying that man is a mosaic of original, *ineradicable and unlearned tendencies to action.* (The italics are used in the book.) One is also suspicious of the accuracy and soundness of a present day psychological book claiming that sleep for the newborn baby is the result of a craving to escape the annoying reality of its new world possibly symbolizing a return to the uniform warmth and comfort of its prenatal existence, where every want was automatically cared for and no desire left unfulfilled. Moreover the

idea expressed in the book that an instinctive attraction due to indelible biological memories causes a youth to covet a jackknife is fanciful to say the least. Another equally bizarre statement is the idea that infants like to wield a stick, banging away right and left, because they are re-instating the club-using stage of man's progress.

The author is to be commended for stating two kinds of fallacies that seriously impede the progress of rational thinking: "The proneness to support a pre-conceived opinion by affirmative instances, neglecting opposing cases, and the tendency to generalize from an insufficient number of observations." It is unfortunate that our author was unable, in numerous parts of his brain-child, to free his thinking (his writing, to be more precise) from both these fallacies.

The book, on the whole, is very readable, entertaining and informing. However, one must be thoroughly familiar with the subjects discussed in order to separate wheat from chaff. Since most of the wheat is borrowed it is doubtful whether the book is worth the while of him who already knows. For the layman the book may be seductive but unfortunately the layman needs must digest the chaff along with the wheat and too much chaff is apt to be followed by indigestion, mental or otherwise. Let us at least hope for the correctness of the author's belief that his book gives an analysis of the mechanism of personality whereby one may acquire the insight requisite to self-understanding and, armed with this insight, presto chango, then be able to open the doors of Self-mastery and Self-expression. The reviewer may hope this but he is still unable to auto-suggest to himself or to others that every day, in every way our psychopathological popular books are getting better and better.

STUDIES IN INDUSTRIAL PSYCHOLOGY

By Elsie Oschrin Bregman. Archives of Psychology, No. 59. September, 1922. Pp. 9–53

Reviewed by Margaret Walton

In this country and at this time, the term "industrial psychology" connotes chiefly the use of psychological tests for the prediction of ability, general or special, native or acquired, with a view to the most effective placement of individuals within an industrial organization upon the basis of such knowledge.

The title of this paper uses the term in this special sense, since the paper treats of tests for general and special abilities. The latter are specifically the abilities of sales clerk and clerical worker in a large department store.

Part I takes up two language completion tests, tests for general ability. The tests which are the subject of these studies are two scales derived from Trabue's language completion exercises. That in the performance of both tests information bearing on general ability of the person tested, is given, seems to be indicated by the close correlation with the Otis examination, and by the positive association with executive ability and general success in life as measured by occupational rank.

For the purpose of gaining information concerning the intellectual quality of the individual tested, the two tests, Scale I and I-A, were found to be very serviceable in the organization in which they were used. By selecting again, from among the individuals, those applicants who made scores toward the lower end of the curve of distribution, employment of the dull and defective could be guarded against.

Part II deals with tests of special ability. The tests used were sets of the N. R. C. Tests, the precursors of the National Intelligence Tests. Later new tests were devised which were similar in form to those that gave the highest correlations. These

tests differed in content by being less academic, more industrial. These and several tests in their original form were given to a group of 1000 average sales clerks and 43 average clerical workers. The relationship between the two groups which was obtained with the original tests and the original groups tested held with new tests and the new groups.

These tests are now being used in connection with the employment of sales and clerical workers.

The negative correlations which were found to exist between sales ability and test performance are sufficiently unique to merit an attempt at an explanation.

The writer holds that these negative correlations result from a combination of two sets of circumstances: first, that the body of employees in this organization are a selected group from which the more able have eliminated themselves because of working conditions; and secondly, that certain character traits which the tests do not measure play an important role in successful selling of the type under consideration.

The writer further discusses the place of the psychologist in industry, and emphasizes the fact that very few organizations have personnel records that are acceptable to the psychologist. Yet a true evaluation of the tests is directly conditioned by the reliability of the criteria. The first work of the psychologist is then very likely to involve the creation of a system of personnel and production records, or the radical revision of an existing system.

Such a system of records, evolved as a by-product to the evaluation of certain tests and for the use of the psychologist, is also of interest and value to the organization in general. In developing them the psychologist has a field of usefulness, that is in addition to the application of tests.

THE OPEN ROAD TO MIND TRAINING

By Esme Wingfield-Stratford. Thomas Y. Crowell Company, New York. 1922. xvi + 253 pp.

Reviewed by Harry D. Kitson

Sharply rebuking those mongers of systems of mental training who give the impression that improvement of the mind can come only through following some secret formula which they alone possess, this author asserts that the road to mental improvement is open to all; and that the way lies in following precepts which the race has worked out in experience and has embodied within that collection of ideas ordinarily known as common sense. These precepts the author sets forth with copious illustrations from everyday life and from general literature, in that delightful style characteristic of products of English training.

The chapter headings are: The Physical Basis, The Sensitive Mind, Imagination and Sympathy, The Ordering of Ideas, Memory and Memory Systems, The Feelings, The Will, Rhythm, Expression, Creative Genius, Harmony. In some of the chapters, exercises are given by which the reader may develop the desired mental habits. Thus, in the chapter, Imagination and Sympathy: "Now try the experiment of mentally constructing the past thought and circumstances of others. You have just passed in the street that worthy but hitherto uninteresting official, the district surveyor. Uninteresting? You commence to speculate about him. Is he married, and if so how did he propose? Did that impenetrable mask of officialdom drop from his face for one burning moment? Does he play blind man's bluff with his family? Who taught him to survey? Did he go to a grammar school, or a polytechnic, and would he have been popular with his fellow pupils? Some day, perhaps, you will

be able to draw him out and test your results. Even if you never attain to this height of familiarity, you have at least been developing your imagination, seeing things, even incorrect ones, with your mind's eye."

Though many of the prescriptions are sensible, they fail to show much trace of the results that have emanated from the laboratories of the patient experimental psychologists. One exception is the description of the association method as employed by Jung. Some attention is given to the psycho-analytic method of Freud. Occasional reference is made, also, to William James.

There is an excellent outline-summary, but no index.

THE MANAGEMENT OF THE SALES ORGANIZATION

By Frederic A. Russell. McGraw-Hill Book Company, Inc., New York. 1922. Pp. 227 + vii

REVIEWED BY H. G. KENAGY

The author of this well-written, handy volume is a college professor, not a sales manager. This fact is responsible for some points of excellence, but also for some short comings. The problems of salesmen management which have received voluminous attention in periodical sales literature during the past three years, are handled by the author in systemmatic, orderly fashion. The best that has appeared on each subject is reviewed and outlined in simple, forceful style. The students in Professor Russell's classes should have no difficulty in mastering subject matter which is so carefully organized.

Throughout the book, whether discussing solution, training, equipment of salesmen, territory, compensation, conventions, or salesmen's reports, the author seems to have been guided by the readily available literature on the subject. Naturally, therefore, some subjects are magnified while others are slighted. Conventions are discussed in much detail and with many illustrations in a chapter covering twenty-seven pages! Supervision of salesmen is not even recognized as a major problem of management. Yet conventions are losing caste as means of developing sales forces, giving away to local group conferences, while constructive supervision of salesmen on the job is rapidly becoming the point of greatest emphasis in building an effective selling organization.

A well organized review of the literature of salesmen management is exceedingly useful as a college text-book, but it offers little of real value to the sales executive.

Progressive sales managers today are not so much interested as formerly in the practices of other sales organizations, suggestive though these may be, as they are in discovering methods of working out their own solution. The sales manager wants to know, not how Jones and Company pays its salesmen but how his company can find out which method of compensation will secure the best results under the particular combination of conditions which constitutes its own selling problem. Again, the sales manager is interested, not in the reasons why an office specialty company started a factory training school for its salesmen, but in how he can determine what his own salesmen need to know and how that knowledge can most effectively be imparted.

Professor Russell has made no attempt to provide his sales manager readers with this latter type of assistance. This is true in spite of the clear implication in the preface that the work is a treatise on the principles of scientific sales management. The principles are mentioned in the preface, but they are not applied or even explained in the chapters which follow. In fact, the author seems for the most part ignorant of the work which has been done in this field by such organizations as the Taylor Society. the

Bureau of Personnel Research, and the special sales research departments of some large corporations.

The selection of salesmen has always been a problem of major interest to sales executives. It is a field in which much experimental work of a scientific nature has been done, and Professor Russell might have presented much helpful information on the subject. However, instead of showing, for example, how salesmanagers, by keeping proper records and subjecting them to statistical analysis, could determine accurately the comparative value of various sources of material for the sales force—instead of doing this, he discusses in academic fashion the reasons for and against using such sources as advertising, competing organizations, retail clerks, factory operatives, schools and colleges, etc. The one redeeming feature of the entire chapter on selection is the paragraph on how to interpret the application blank.

Careful summaries of existing sales literature serve a useful purpose. Professor Russell deserves much credit for his painstaking work of sifting the few grains of wheat from the many bushels of chaff which are disgorged from the printing mills of our business magazines. But there is still room for a treatise on sales management which will help the sales manager to organize his organization, as well as learn the experience of others, and how to interpret the results in terms of concrete management methods.

Abstracts

The Use and Limitations of Psychological Tests. DANIEL STARCH. Harvard Business Review, October, 1922, Vol. 1, No. 1, pp. 71-80.

The business world is interested in the control of machines and in the control of men. Most progress thus far has been made in the control of the physical forces. Present day psychology is attempting to show the possibility of applying scientific methods to the problems of controlling these human forces.

The present paper is limited to the discussion of one concrete aspect of this problem, namely the evaluation of given individuals by scientific methods in relation to specific tasks to be done. The author first discusses certain pseudo-systems of evaluating and analyzing character now in vogue. One of these is the method of selection, according to the particular arrangement of facial and cranial features; a second is according to the handwriting of the applicant; a third by his photograph. Careful experimentation has shown the many fallacies in these systems. The study of the brain and the investigations of experimental psychology have shown that the contour of the face and the contour of the brain give no direct measure of the strength or relative predominance of various intellectual and moral traits. In regard to the interpretation of character through handwriting, the work of Dr. C. L. Hull showed that in no cases did a uniform relationship exist between actual traits possessed and the careful measurements of that characteristic of the handwriting which it is supposed to indicate.

The second part of the paper is given over to a discussion of the scientific methods of present day psychology in analyzing human character, qualities and aptitudes for specific types of occupation or tasks. The work in this field is new and only a substantial beginning has been made. "Two important and specific accomplishments may be mentioned. In the first place, psychological investigations made during the past decade and particularly during the past five years have demonstrated that it is possible to measure general intelligence, ability or mental alertness, at least within approximate limits. In the second place, in addition to the measurement of general intelligence, we are beginning to measure with some degree of approximation, special aptitude and qualities required for various types of occupations and tasks. Besides needing to know what range or level of general intelligence is required for a given job we also need to know what specific aptitudes, knowledge and skill within that level of intelligence are needed to be successful in doing the task and being satisfied and happy in it."

The third part of the paper is given over to illustrations of the successful use of psychological tests in industry. The first study cited gives the results of psychological tests given to a group of 300 graduate men students who are preparing themselves to become business executives; a group of retail shoe salesmen; a group of assistant buyers and semi-executives in a retail store of women's furnishings; a group of saleswomen in the same store; and a group of waitresses in a chain of restaurants. The accompanying chart shows graphically the actual difference in ability apparently required for these various types of work and also the fact that it is possible to measure this ability with a reasonably satisfactory degree of accuracy.

The shoe salesmen of the first study were further analyzed. Figure 2 represents the shoe salesmen analyzed from the stand-point of their value as salesmen in relation to their test scores. The executives who knew this group of men classified them from the

standpoint of their value as salesmen into three groups, namely,—very good, good, and mediocre. The good and very good groups were combined. The average score of the good group was 46, of the mediocre group, 32. "The significant fact is that the tests separated to quite a large extent these two groups of shoe salesmen. If a critical score of 33 were used, none of the good or very good men would be rejected, and 57 per cent of the mediocre would be eliminated.

Another still more detailed analysis was made of another group of shoe salesmen and women. The executive officer classified them as above average, average and below average. On the tests the below-average group had an average score of 41, the average group had an average score of 71, and the above-average group a score of 96. There was considerable overlapping. Only an intelligence test was given.

Still another group of shoe salesmen and women were classified in the same way and given two tests,—a general intelligence test and an occupational shoe test. The scores were average. The addition of the occupational shoe test served to differentiate the three groups more completely. Thus, none of the persons in the below-average group had a score as high as the average of the average group. The best score made by any one in the below average group was much below the lowest score made by anyone in the above average group. Two other analyses of the same kind were made, the one a differentiation between assistant buyers and saleswomen in a women's specialty store; the other a further analysis of the group of restaurant waitresses.

In concluding Dr. Starch summarizes the precautions which a business concern or industry should observe in attempting to apply scientific methods to its problems of selection and human engineering. He makes the following recommendations to business enterprises interested in testing:

1. Secure the services or counsel of a psychologist of scientific training.

2. Maintain an open-minded attitude in order that the work may be done in a thoroughly scientific manner.

3. Make job analyses.

4. Select from available tests those suitable in the light of the job analyses previously made. Give the tests first to two groups of known ability, a good and a poor group. In this manner the value of the tests may be ascertained and the extent to which they will differentiate between the good and the poor group may be determined.

5. The final step will be to modify the tests in the light of these experimental results, in such a way as to make them as serviceable and reliable as possible.

Occupational-Intelligence Standards. Douglas Fryer. School and Society, September 2, 1922, Vol. XVI, No. 401.

With intelligence as a standard, there are several definitely determined occupational levels, blocking an individual into the fields of his occupational achievement. Five such occupational levels are "blocked" out, with their respective intelligence requirements:

I. Professional occupational level (Superior intelligence required).

II. Technical occupational level (High average intelligence required).

III. Skilled occupational level (Average intelligence required).

IV. Semi-skilled and low skilled occupational level (Low average intelligence required).

V. Unskilled occupational level (Inferior intelligence required).

As an aid in his placement problems, Mr. Fryer studied the intelligence records and occupational interests of 3598 applicants to the vocational department of the Central Branch Y. M. C. A. Brooklyn. The intelligence test ratings are derived from Army Alpha scores and scores on Business Alpha, a 20 minute intelligence examination arranged and standardized by H. D. and L. P. Fryer. The average test scores and their range for 96 occupations are given. These occupations are then grouped according to test levels, each level being given a letter rating, A. B. C.+C. C−.D. Mr. Fryer concludes that an individual to be placed in a given occupation should have an intelligence score within the range of

that occupation, preferably he should be above the score average in order to be sure of sufficient, intellectual capacity for the occupation.

The Value of Ratings. E. J. Benge and Louis L. McTague. Industrial Management, October, 1922, Vol. LXIV, No. 4, pp. 239–242.

Presents a study of values of ratings made by thirty-two men on ten men of their acquaintance, with regard to seven qualities:

(1) Probable yearly salary.
(2) Brunette or blonde.
(3) Aggression.
(4) Intelligence.
(5) Probable ultimate income.
(6) Married or single.
(7) Height.

Brunettes were judged slightly better than blondes, contrary to usual opinions on this subject, in both intelligence and financial aggressiveness. Strong correlations were obtained between aggressiveness and salary and also between aggressiveness and intelligence. Many interesting conclusions are arrived at by the study. The authors state that their results warrant the conclusion that the standardized rating method is justified.

Intelligence Tests as a Means of Admitting Special Students to Colleges and Universities. William Martin Proctor. School and Society, October, 21, 1922, Vol. XVI, No. 408, pp. 471–476.

Describes a testing program used at Stanford University to select for admission disabled ex-service men with insufficient educational requirement. The article shows that:

(1) The practically universal requirement of four years of high school for college entrance, coupled with pressure for admission, tends more and more to exclude from higher educational opportunities, men and women who, although capable and mature, lack entrance requirements. The species *special student* is in danger of becoming extinct.

(2) The world war caused many institutions to open their doors to special students who had been disabled in the military service, on the basis of mental ability, maturity and vocational experience.

(3) Records of 41 such special Veterans' Bureau trainees at Stanford indicate that their success in university work has been in direct ratio to their scores on the Army Alpha intelligence scale. Also that the highest 13 mentally of the specials made an average scholarship rating 15 points higher than the highest 13 of the regular Veterans' Bureau trainees. All specials averaged higher in scholarship than all regulars.

(4) In the light of such results it should become the practice of colleges and universities to reserve a definite proportion of registrations for men and women of maturity, proved mentality, and definite employment objective, regardless of entrance deficiencies. The case of the man, who was admitted with fifth grade education and made better than a "B" average in two quarters of work will become classic as an illustration of what special students of this type are capable of doing.

(5) Not only should special students be admitted on passing satisfactory mental examinations, but they should be allowed to graduate on a minimum of one extra year of university work, without being compelled to make up traditional entrance requirements.

Imitation and Mental Adjustment. Joseph Peterson. Journal of Abnormal Psychology and Social Psychology, April–June, 1922.

The conception of imitation as an important method of adjustment, though now, fortunately, omitted from important books on social psychology is still in good standing with certain writers even of text books in this line of work; and it serves no doubt, not only to retard progress by substitution of vague thinking for scientific analyses, but also to preserve the reflex idea of behavior to which we have already referred.

To the psychologist who comes into close relations with the individual from all standpoints and attempts to render an accurate account of his behavior whether

in terms of stimulus-response relations or in terms of mental processes as introspectively obtained, the imitation doctrine does not seem adequate. The uniformity of actions among individuals may be due to any one, or to combinations, of the following conditions:

(1) The individuals may have practically identical innate structures and may be stimulated by common stimuli.

(2) They may find uniformity to some degree the most economical and time saving.

(3) If one individual acts very differently from his fellows, he may attract the attention of others and become embarassed, self-conscious, or may receive disapproval and suffer disadvantages therefore.

(4) There may be obvious approval or friendship shown by others as a reward of copying their behavior, thus arousing one's instinct of comradeship so characteristic of small groups.

(5) Different individuals may have successfully come into, or been born into, the same social environment and each has taken in the moves and habits of the social group by a trial and error process and by actual instruction.

(6) Social life requires common language and other symbols of thought and action, and any person of a group can get self-expression and self-assertion to any considerable degree only by the use of such understood language and symbols, however inadequate they may seem to be.

(7) The actions of others may call an individual's attention to certain things and conditions, stimulating and important to him, which he needs or is organically prepared to use but did not know were available, such as the presence of food, of some toy or of certain physical or moral dangers. The stimulus value of these things is increased by the actions of other members of the group.

(8) The enthusiasm of individuals for certain kinds of behavior or specific kinds of activity is not great when they are alone or in very small groups, but may be greatly increased by the stimulation of enthusiasts or of specialists in certain lines when present.

(9) Each individual may have for certain acts—such as yawning, smiling, giving vent to general activity of certain emotional kinds—an inherited special mechanism of such a nature that when one individual of a group performs certain acts, for whatever cause, these mechanisms are automatically stimulated in other individuals.

(10) Different individuals may have acquired by trial and error learning, mechanisms that work as do those for yawning, etc., which, have been inherited.

(11) Through the work of important and recognized individuals, certain kinds of work and recreation, certain manners and special activities may have acquired recognition and approval to the extent that a person finds it possible to elevate himself by doing these things, if he has the ability to do so.

Dr. Peterson considers the greatest error of the imitation school, to be that of regarding the individual as passive and undiscriminative to an unreal extent, and therefore directed in group or social activities largely by the actions momentarily perceived in others. They have neglected the importance of the urge from within the individual, those large determining tendencies acquired both through heredity and by the general consistency of the environment in the ontogenetic history.

The Use and Abuse of Instinct in Social Psychology. WILLIAM MCDOUGALL. Journal of Abnormal Psychology and Social Psychology, December, 1921–March, 1922, Vol. XVI, Nos. 5 and 6, pp. 285–333.

McDougall proposes to answer some of his more radical critics and to examine some of the views on the subject that are allied to his own. Since the appearance in 1918 of his "Social Psychology" many authors of books on education, and various branches of social science have accepted his scheme of the human instincts in more or less qualified forms.

Chief among the theorists who have independently weighed his evidence, and whose practical agreement he claims, are Dr. Drever and Professor Stout. Dr.

Morton Prince and Dr. H. Goddard have endorsed the scheme in the practical fields of nervous and mental disorder. The writer believes that the existence of instincts in man must always remain an hypothesis, justified, if at all, by its coördinating in an effective manner an immense range of facts of immediate observation.

Those who reject the view that human nature comprises instincts or innate tendencies, fall into two groups (all "deniers"). (1) Those who deny all instincts to man; (2) those who admit certain simple human instinctive tendencies, such as that of the babe to suck, or to hang by the hands; but deny that these or other innate tendencies continue to play any important part in later life. The former call all such infantile movements reflexes; the latter distinguish between such simple instinctive tendencies and reflexes.

The article takes one by one a number of the viewpoints of these deniers and gives the answer that is made to these critics.

Watson, Thorndike, Dunlap, Kantor, Lloyd Morgan, Bernard, Z. Y. Kuo, Perry, and Tolman, are all quoted and answered summarily. The chief argument becomes —"mechanistic dogma." A passage from Bernard exhibits the deductive origin of the anti-instinct position. Mr. Kuo is the most radical and logical of the deniers. He denies all instincts, not only to the human species, but also to all the animals. "The so-called instincts are in the last analysis acquired trends rather than inherited tendencies."

Professor Perry, who was attracted to behaviorism in the interests of his new realism hardly achieves his purpose of becoming a full-fledged behaviorist. Instincts for him are "determining tendencies" instead of "pattern reactions," whereas they are innate tendencies to pursue by purposive actions certain biological ends, roughly definable as mating, the cherishing of offspring, the escape from situations of certain types, the breaking down of opposition to impulsive or purposive striving, the better acquaintance with strange objects, the dominance over one's fellows, the presence or companionship of one's fellow creatures.

The author was first greatly influenced by the view that instinct was merely a motor mechanism and later tried to combine this with the idea that instinctive action involves or expresses an urge, an impulse, a striving toward some goal by the attainment of which it may be allayed or satisfied. His attempts were unsuccessful and resulted in the rejection of the entire notion that the essence of instinctive action is the utilization of innately organized motor mechanisms. An instinct, or a given instinctive impulse, may take us at need of a large array of motor mechanisms, different instincts expressing themselves on different occasions through the same motor mechanism; although it may be true that any one instinct most readily finds expression through some one such mechanism, or through some one coördinate system of such mechanisms. With the exception of Lloyd Morgan, the deniers of human instinct are not authors who have made any profound study of animal behavior, or of the problems of organic evolution.

Dr. W. H. R. Rivers in his "Instinct and the Unconscious" accepts in the human species an array of instincts which differs little from McDougall's list. The classification being according to the general character of the ends they subserve, is undesirable because somewhat artificial and tends toward confusion.

Recent contributions to the theory of human instincts are commented upon in a much gentler style than those made by the "deniers."

Rivers accepts as established in "orthodox psychology" many things that are not established, nor have been accepted by the "orthodox," among whom is a wide diversification of belief. The idea that suggestion, sympathy and imitation are three modes in which the gregarious instinct operates, is attributed to McDougall instead of to Trotter in his loosely thought treatise on the herd-instinct. These processes, as well as many others, are dependent upon the operation of highly elaborate and refined sentiments.

The relation of instinct and emotion is considered with the viewpoints of Watson, Woodworth, Kantor and Drever.

Those who deny instincts to the human species are not, as some of the younger of them seem to imagine, boldly striking out on a new line, but are true reactionaries.

Practical Training of Young Engineers After They Leave School. MICHEL ROUGIER. Secretary of the Chamber of Commerce of Deux-Sevres. La Formation Professionnelle, October, 1922, Nos. 49 and 50.

Young engineers on leaving the technical schools are unable to find employment: on the other hand, in the press and in parliament everyone complains that France has few competent technicians and is falling behind in the race with her foreign competitors, notably Germany. Many employers refuse to take on the young graduates because they lack practical experience. The Assistant Secretary of State had suggested the foundation of practical training schools, but M. Rougier deprecates this because of the expense and because in schools, however well-organized, it is impossible to give the students normal working conditions.

Certain important establishments where the importance of technical training is recognized already, take engineer graduates for a year's practical training, routing them through the plant and giving them an agreed hourly wage. This is the best solution yet devised of the practical training problem.

This program involves pecuniary sacrifices and breadth of vision from manufacturers. But if they are as intensely interested in securing trained technicians as their discussions in the Chamber of Commerce would show, they will surely adopt this policy.

Vocational Guidance. Report to the President of the Republic by the Minister of Public Instruction and of Fine Arts. LEON BERARD. La Formation Professionelle, October, 1922, Nos. 49 and 50.

By the law of July 1919, vocational guidance of adolescents came under the jurisdiction of the Assistant Secretary of State for technical instruction. This law gave to local commissions the task of organizing courses, granting certificates, determining aptitudes of candidates for employment, and to local placement bureaus the task of finding employment. These local agencies are incompetent to do the work. Determination of tests for physiological and psychological traits and aptitudes for different vocations must be done by experts. M. Berard therefore proposes that the president should issue a decree covering the following points, among others:

Research concerning vocational guidance is to be centralized under the direction of the Professor of Technical Organization of Industry at the National Conservatory of Arts and Crafts.

Public placement bureaus can set up Vocational Guidance Bureaus subsidized by the Department of Technical Educator provided that the permanent commission of the Departmental Committee on Technical Instruction is represented in their administration.

Outlines of Instruction in the Needle-Working Trade. J. V. LYNN. Engineering Extension Department, Iowa State College, Ames, Iowa.

A study made in an attempt to provide instructional material for use in schools where girls are anticipating entrance upon or have already entered the needle-working trade. The survey was made in Dubuque, Iowa, where the public part-time school was up against the problem of giving civic and vocational instruction to girls working for a manufacturing concern making sleeping wear and overalls. The author states: "While the direct purpose of the survey was to assist in the solution of a local problem, it is felt that it can serve in a suggestive way to other part-time school officers having similar problems in other industries. It will also be serviceable to heads of vestibule schools in the needle trade elsewhere, and may suggest to plant instructors of other industries a way out of some difficulties."

Two possible agencies for training workers in semi-skilled employment are the public school board and the factory vestibule school. In the factory school there is provision of machines, power and material

with very little extra expense, but a serious handicap is that (1) the instructors, selected from among the most capable operators, often fail to include sufficient material in the outline of what should be taught, and (2) they are not trained to teach and have the impression that "showing and telling is teaching." In the part-time school, instruction may either include both acquiring of skill on power machines and the imparting of essential auxiliary information related thereto, or it may cover only the general facts about employment in the trade, the auxiliary information of a more general type regarding the materials used, and the story of its production up to the time it comes to the factory as raw material."

Clearly defined aims are necessary before any body of material can be set up for instructional purposes either in a part-time or vestibule school. The following are suggested:

1. To train the learner as a high speed operator of some particular machine doing a special operation.

2. To train the learner as a skilled operator of some particular machine doing a number of operations.

3. To train the learner as an intelligent, skilled employee giving full time to operation of some machine.

4. To train the learner as an intelligent, skilled employee giving full time to variety work on some one or more machines.

Outlines of courses are given. They cover (1) general instructional content, which includes, the local company, manufacturing costs, markets and competition, and capital turnover; and (2) common factory knowledge, including the local organization for production, materials used in factory production, equipment, routing system, card and ticket systems and employment and training. A detailed analysis of certain departments was made so that machine operators might become familiar with the construction of a garment from first to last, and also to provide a basis for more thorough instruction on specific operations by noting points which might otherwise escape attention. An outline of this analysis is given in detail for each department. A sample instruction sheet, to supplement personal instruction, is illustrated. It is the lesson summary in permanent form with some test exercises attached, and is intended to be handed to the learner only after a personally conducted lesson has been put over.

Workers' Education in Belgium. HENRI DE MAN. International Labour Review, October, 1922, Vol. VI, No. 4, pp. 527–545.

This article treats of the development of the education of workers for leadership in the labor movement. The "National Committee for Workers' Education" has carried on this work and in the past ten years has exerted a marked influence on the working class of Belgium as a whole. A "Worker's College" has been established by the Committee. This college opened its first six months' session October 3, 1921. This session was conducted in French. The second session beginning on April 3rd was conducted in Flemish. The education is showing its effects particularly upon the younger workers and among the older workers few can be found who regard the movement as wasteful or limited to a privileged few.

Continuation Schools in Norway. MARTIN L. REYMERT. The Pedagogical Seminary, June, 1922., Vol. XXIX, No. 2.

Available statistics for the summer 1919 show that more than one-half of all children in Norwegian cities and towns had no plan for further schooling after graduation from the seventh grade (average age, 14–15) of the public school.

Up to the time of the new bill, now before Congress, the state school laws of Norway contained only some short general suggestive regulations for compulsory continued schooling. However, quite a number of continuation schools were established both in city and country districts, and recently a great interest has manifested itself all over the country—for more continuation schools.

The Kristiania Continuation School for Girls was started in 1900 with twenty pupils a year. In 1919 there were forty-one regular

classes and twenty-four practical evening courses, plus six day classes, with 100 women teachers all of whom have had regular and special training, many of them having studied continuation schools in foreign countries. The course of study covers:

1. Manual training; dressmaking and sewing of baby outfits; millinery; domestic service.
2. The mother-tongue, including sociology.
3. One foreign language (English).
4. Bookkeeping and mathematics.

A similar school was started for boys in Kristiania in 1899 and most Norwegian cities are now provided with free general continuation schools with program, etc., similar to the schools in Kristiania.

Technical evening schools date back to 1802, "Sunday Schools" in Bergen, Norway, and the now prevailing system received its state regulation in 1918. There are now 60 of these technical evening schools with a total of 5842 pupils." They are primarily created to meet the demands of the state laws regulating the executing of trade and industry in Norway and are therefore concerned about the training and schooling of the laborers in these fields. To be accepted, an applicant must be 14 years of age and pass tests in Norwegian and arithmetic, thus proving that he has at least reached the goal of a full public school training." The courses last for three years with the option of a fourth year. Subjects are: Norwegian with sociology, keeping of accounts, mathematics and trigonometry, construction and projection drawing, free hand drawing, natural science, technical drawing.

In 1875 a central school for home industries ("Den Kvindelige Industriskole i Kristiania") was established in the capital and in 1900 it was taken over by the state. Since then this school has been the leading one in the country. It has about 10,000 graduates. Subjects taught are: Weaving, dyeing, tailoring, linen sewing, repair, ironing, classes for the training of teachers in manual work and arts for girls. Four to five hundred pupils graduate very year. There are quite a number of such schools in Norway patterned more or less after the one in Kristiania.

Special household and cooking schools date back to 1890. In 1914 there were 34 such special schools in the country districts and 19 in the cities.

Preparatory Part-time Continuation Schools for trade and industry are conducted in the principal cities of Norway. The expenses of these schools are in most instances paid one-half by the state; the other half by the city. The course of study is approved by the state Department of Education. The students must have graduated from the seventh grade.

The new national bill (now pending action in Congress) for compulsory continued schooling in Norway was introduced for the following resaons:

1. Most existing continuation schools were evening schools, thus intruding upon the youngster's well-needed free time.
2. Employers did not always grant the necessary free time from the job.
3. By centralizng the continuation schools under the state, uniformity in program, teacher training, text books, etc., can be obtained.
4. By making the schools compulsory the state manifests its interest in the difficult adolescent period of the youth of the country.
5. The compulsory continuation schools will tend to raise the quality of work in "skilled labor" and the trade.

An outline of the new national bill is appended.

The Three-Shift System in the Iron and Steel Industry. International Labour Review October, 1922, Vol. VI., No. 4, pp. 547-558.

This article presents the information collected by the International Labour Office in relation to the three shift system in the iron and steel industry. The information was obtained from questionnaires sent to governments, and representative associations of employers and workers. The investigation was limited to blast furnaces, open-hearth furnaces, Bessemer converters, and rolling mills. The questionnaires developed the fact that throughout Europe the three shift system has almost entirely replaced the two-shift system. The change has been so recent, however,

and conditions so abnormal that a worthwhile comparison between the old scheme and the new scheme can not be drawn. In most cases. the workers favor the plan. Many employers, however, would prefer to return to the two shift system. An English manufacturer who has used three shifts since 1897, though, finds that the system has been a distinct gain both to him and to his workers.

Labor and the Twelve Hour Day. SAMUEL GOMPERS. American Federationist, October, 1922, pp. 763–766.

Discusses the reasons lying back of the change from the twelve-hour day to the eight-hour shift. At the Philadelphia Convention of the A. F. of L. the following resolution was adopted: "The question of the regulation of wages and the hours of labor should be undertaken through trade union activity and not be made subjects of law." In view of this attitude it is heartening to note the adoption by the Executive Board of the American Engineering Council of the Federated American Engineering Societies of a report calling for the discontinuance of the twelve-hour day in continuous industries and the development of the three shift eight-hour day. Back of every thing in the altered attitude in favor of the eight-hour day lies the long campaign of the trade union movement for reduction in the hours per day of labor, a campaign based primarily upon human needs. For to sap the whole energy of workers in physical toil is to rob industry and the nation itself of that which is best, most vital and most fruitful, and this America will no longer tolerate.

The Ideal Work-Curve. THOMAS BEDFORD. The Journal of Industrial Hygiene, October, 1922, Vol. IV, No. 6, pp. 235–245.

Deals with a study of work-curves for various industrial operations. Previous study of work-curves "points to the probable existence of an ideal work-curve; and, further, it indicates that, should such an ideal curve exist, it would be a straight line showing a steady rise from hour to hour and from day to day." This study produces evidence in favor of this proposition.

A summary of the facts shows that:

(1) Where there was a variety of work and the operation was of a rhythmic nature, a rapid fall in output was avoided and the work-curve remained steady with a tendency to rise throughout the day.

(2) When the hours of work were shorter and work lighter, the output rose throughout the week; while with longer hours and heavier work the output curves were increasingly irregular with a rapid falling off toward the week-end.

(3) At a factory with an eight-hour day there was a closer approximation to an even maximum output than at a factory with a ten-hour day.

(4) Individual output records show that in boot and shoe factories, in practically every group of workers considered, the best worker of a group had a graph rising toward the end of the week, while the poorer workman's curve fell earlier in the week and was more irregular. Consideration of frequency distributions reveals the fact that the better worker was consistently steadier than his fellow-workmen.

(5) In a group of girls labelling small packets, the quickest worker was generally the steadiest.

(6) Other examples show that where fatigue was lessened by the provision of sitting accommodation, output was higher, and the work-curve came nearer to our ideal of a rise throughout the day.

An Investigation into Breakage Problems. G. H. MILES AND A. B. EYRE. Journal of the National Institute of Industrial Psychology, October, 1922, Vol. 1, No. 4, pp. 132–140.

Illustrates the inadequacy of attributing breakages to carelessness, accidents, or poor material. The investigators first located the chief points in the flow of material where breakages occurred, and divided the breakages into "direct," where an individual was immediately responsible, and "indirect," where it was the outcome of repeated mishandling. The investigation showed that the "danger-points" came at those stages where material conditions or human conditions had an irritating effect on the worker. By eliminating these sources of irritation, a reduction

in breakages amounting in the case of some articles to over 75 per cent, was effected, and the workers were less fatigued at the end of the day. The investigators suggest that further improvements could be made by more careful selection and training of the supervisory staff and by the training of new workers in the best methods of handling the articles and avoiding breakages.

Notes on the Lay-out of a Hand-Compositor's Case. SHEILA M. REVINGTON. Journal of the National Institute of Industrial Psychology, October, 1922, Vol. 1, No. 4, pp. 141–151.

Miss Bevington has devised a new arrangement of the types in a hand-compositor's case, whereby, together with the use of two new logotypes, his hand-movements were reduced in extent nearly 20 per cent. The method of investigation was to decide the average frequency—distribution of letters and spaces, and to rearrange types to bring those most frequently used within easiest access of the right hand, and to bring into juxtaposition those letters most often used in combination. A motion-study was made to determine the distance travelled by the compositor's arm in setting up 5,000 ens of matter. The investigator considers that time would be saved and fatigue lessened as a result of using the suggested lay-out.

Fundamental Ways of Reducing Labor Turnover. WALTER J. MATHERLY. Administration, October, 1922, Vol. 4, No. 4, pp. 471–477.

Disregarding entirely the temporary relief measures for reducing labor turnover, the author outlines methods of reduction from the long-run point of view. Two main classes of these are those internal and external of the enterprise. The external class resolves itself into a community problem rather than one particularly industrial and calls for the joint effort of employers, employees and all citizens in the betterment of the social, civic and educational advantages of the locality. Cooperation among workers' organizations and the companies in bettering the community may encourage the entire citizenry to similar activity. Such interests decrease the mobility rate.

Fundamental methods of elimination of the internal causes are:

1. Make the work agreeable.
2. Regularize the job.
3. Scientifically adjust the length of the working day.
4. Pay attractive wages.
5. Adopt the most improved machinery for the supervision of personnel.

To determine the disagreeable parts of the work, job analyses are suggested. Three day week during slack periods, elimination of short time jobs, standardization of products, manufacture for stock, development of a side line for slump seasons and dove-tail production of two or more products for seasonal fluctuations are suggested to regularize the job. The physical and mental strains which accrue should be the basis for determining the length of the working day. Unnecessary overtime with its deleterious effects may be removed by scheduled production, control of progress of production orders through the plant, a resignation notice requirement and elimination of tardiness and absenteeism. Discusses items to be considered in a just wage plan. The customary activities of a personnel manager making up his main job as coordinator are outlined and marked as the most important factors today in reducing labor turnover.

The Labor Turnover Chaos. J. D. HACKETT. Reprinted from Management Engineering, Vol. 3, No. 6, pp. 347–349.

A series of critical statements on present methods of calculating turnover, on the lack of standards for terminology, and on classifications of causes of exits. Particularly criticizes a recent report from the Department of Industrial Research of the Wharton School of the University of Pennsylvania, recently reviewed at length in this Journal. Prefers to use both terms, "resignation" and "quit," to indicate two voluntary types of separation—those with and without notice. Gives list of denominators used in calculating termination ratios. Criticizes the majority of these as being indefinite in meaning. Does not believe

the phrase "dislikes work" sufficiently detailed to be of much use in determining conditions which caused the person to quit or resign. States at the close "We need a comprehensive and definite terminology; we need a system of accounting for the inflow and outgo of labor as exact and as logical as that used habitually for material or cash; and a plan whereby the immediate cause of leaving may be ascertained and classified, according to definite principles."

The What and Why of Safety Codes. SIDNEY J. WILLIAMS. Industrial Management, October, 1922, Vol. LXIV, No. 4, pp. 223–224.

Relates method of development of a National Safety code which is now in operation. Through efforts of the U. S. Bureau of Standards, American Engineering Standards Committee, trade associations and semi-technical associations, and engineering societies, a plan was put into effect whereby special committees attacked the problem of establishing a national safety code. After three years the reports of these committees have been accepted in many instances and several safety codes have been completed. The remainder of forty codes to be established ultimately are in various stages of completion.

Cooling Power of the Atmosphere and Comfort during Work. LEONARD HILL AND J. ARGYLL CAMPBELL. The Journal of Industrial Hygiene, October, 1922, Vol. IV, No. 6, pp. 246–252.

Endeavors to prove that there are fundamental reasons why more attention should be paid to the cooling power of the atmosphere necessary to maintain comfort during work. Most of the experiments were carried out on a trained subject, C. P., who had been employed in such experiments for nearly two years. Others were done with the writers as subjects, with results quite similar to those for the subject, C. P.

The experiment brought out the following facts:

(1) The efficiency—regarding the body as a machine—with which external work was performed during short periods by a trained subject on a bicycle ergometer was not altered by raising the dry kata-thermometer cooling power of the atmosphere from 3.9 to 11.2 millicalories per square centimeter per second.

(2) The pulse rate was much reduced and bodily comfort much increased by raising the dry kata-thermometer cooling power of the atmosphere from 3.9 to 11.2. It is considered that the main factor was relief to the heart under the cool air conditions. Such relief keeps off fatigue and enables the individual to work for longer hours in comfort and with content.

Child Labor and the Welfare of Children in an Anthracite Coal Mining District. Children's Bureau, U. S. Department of Labor, Bureau Bulletin No. 106.

A survey of children of adolescent age in the mining district of Shenandoah. Gives a detailed account of the age, parentage, type of occupation, hours of work, irregularity of work, reasons for working and wages of the children studied. Describes the education, medical examinations, mortality rates, the homes of the children, and the recreation afforded them.

Physique of Children and Fitness for Work. International Labour Review, October, 1922, Vol. VI, No. 4, pp. 619–627.

Presents the need for well defined physical standards for the protection of the health of children in industry.

One of the gravest problems of the post-war period is that of production and the output of the individual worker, which in time raises the question of the worker's abilities and his fitness for work. For this reason much greater attention than formerly has been paid to vocational guidance and to physical and mental examination of children, regarded as potential workers. At the same time the protection of the young worker in industry, which was the subject of study and legislation long before the war, is being more extensively and scientifically studied.

Describes the various points covered in physical examinations and gives the results of two independent studies of the physique of school children, one in New South Wales and the other in the United States.

The article concludes: Attention may be called to the recommendations of the United States committee on physical standards for working children for further research and study in this connection. The committee suggested that occupations in which children were likely to be employed should be specially studied in order to ascertain their physical requirements, their effect on the health and growth of the child, and any special hazards involved. The committee also recognized that it was impossible to formulate complete and definite physical standards before further research had been carried out, dealing in particular with the following points: the rate of growth and development of children employed in different occupations and industries as compared with children not in industry; morbidity and mortality among children employed in industry as compared with children not in industry; the effect of employment in specific occupations at different stages of physiological development upon the growth and health of normal children and of children with certain physical defects; the effect of employment in specific occupations upon the menstrual function and pelvic action of adolescent girls and young women and types of work desirable for children with some mental or physical defect, who are nevertheless eligible for an employment certificate.

The development of research and investigations in the physique of children both at school and in industry is clearly, therefore, a necessary preliminary for the establishment of effective measures for the protection of young workers and for any sound system of vocational guidance for children about to enter industry.

Industrial Hygiene Conference of the Women's Advisory Council. The Responsibility of the Employer for the Health of the Worker. Dr. E. C. Jackson, Plant Physician, Edison Lamp Works, General Electric Co. Public Health Reports, October 20, 1922, Vol. 37, No. 42, pp. 2613–2615.

Suggestions as to the way of presenting the responsibility of the employer to the employee, in regard to health conditions, which are as follows:

1. The work place should be not only safe and healthful, but suitable.

2. The employer who appreciates his responsibility for the health of the worker provides well guarded machinery and tools which permit of rapid and accurate work of good quality; and he sees to it that all methods and processes used have health and body hazards reduced to a minimum.

3. Industry as we know it today does not and can not have the personal contact between the head of the industry and the worker in the factory which prevailed when work was not specialized and businesses were smaller.

4. Employers now feel that they have the responsibility, not only to themselves and to workers already hired, but to the man or woman looking for a job, of placing them on work which suits them both mentally and physically.

5. The employer has a responsibility in protecting his workers from communicable diseases.

6. The responsibility of the employer for the prevention and treatment of injuries is well known, but his responsibility in the prevention of disease is not so well recognized.

7. Another responsibility that the employer of today owes his employee, from a health standpoint, is that concerning time for rest and recuperation.

Industrial Hygiene Conference of the Women's Advisory Council. The Scope of the Problem of Industrial Hygiene. Alice Hamilton, Assistant Professor of Industrial Medicine, Harvard Medical School. Public Health Reports, October 20, 1922, Vol. 37, No. 32, pp. 2605–2608.

Gives a survey of the industrial diseases in this country telling what is known of them, what remains to be learned and how we can best learn it. First, a thorough study of dusts is necessary. As to organic dusts very little has been discovered, but as for inorganic dusts those containing either silicon or granite are harmful. Secondly, there should be a thorough investigation of benzol poisoning, as benzol

is a poison which acts rapidly on the central nervous system. Also, a careful study should be made of less familiar poisons such as arseniuretted hydrogen. Even after an investigation has been made of the nature of poisons and dusts, there will still be the question of industrial fatigue to be studied.

The Functions of the United States Public Health Service in the Field of Industrial Hygiene. L. R. THOMPSON, Surgeon, United States Health Service, Medical Officer in Charge, Office of Industrial Hygiene. Public Health Reports, October 20, 1922, Vol. 20, No. 42, pp. 2631–2642.

Gives a survey of the field to be covered in Public Health Service, the chief functions of which are as follows:

1. A careful study should be made, by means of scientific investigation of the basic elements of our industrial laws and the results be made available for use in the formation of State industrial laws.

2. Also the attempt is being made to maintain a small consulting service for the benefit of State and local authorities, industries, and individual workers.

3. Lastly the Public Health Service can cooperate with the taxpayer in several ways: First, by making complete physical examinations of all employees entering the civil service of the Government. Second, by studying sickness records of the different employees in the divisions of the Government. Third, by establishing dispensaries, wherever a sufficient number of Government employees warrants it, to render first aid.

Report of the Committee on Industrial Hygiene, State and Provincial Health Authorities. American Journal of Public Health, October, 1922, Vol. XII, No. 10, pp. 839–840.

At the Conference of State and Provincial Health Authorities Washington, D. C., May 16, 1922, a report was made on the Committee of Industrial Hygiene. It was stated that owing to the fact that the Committee was formed at a time "when the industrial situation was in a chaotic state" no satisfactory surveys of studies could be reported. There were, however, three questions of vital importance which should be answered before a definite policy be outlined: These were presented for consideration, to be discussed at some future date.

First. Is industrial hygiene a proper function for a state department of health?

Second. Is industrial hygiene of sufficient importance to give it a distinctive position in the organization?

Third. What should a state department of health program for industrial hygiene incorporate?

MAY 20 1923